Computer Aids Car Repairs

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D & H Car Painting Program

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RAILWAY
LOCOMOTIVES AND CARS
A SIMMONS-BOARDMAN **TIME-SAVER** PUBLICATION
November 1961

COMP
EDITORIAL DEPT
UNIV MICROFILMS INC
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ANN ARBOR MICH

General Motors Introduces 2,250-hp GP-30 . . . page 17

GET
TUFF!
THE RATH PACKING CO
RPRX
RATH PACKING CO. "Refer" primed, top-coated, and stencilled in one shift—with TUFF Fast-Dry Enamel.

Two Major Coating Advancements for Railroads

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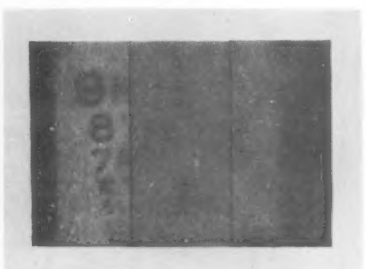
Now—an ultra-durable, high gloss enamel system that enables you to prime, top-coat and stencil a car in 4 to 6 hours. In one shift, you can apply a brilliant, automotive-type finish with years of all-weather durability.



HIGH GLOSS. *Initial gloss superiority of* TUFF *Fast-Dry Enamel (left panel) is shown in this Kerr Definometer Reflectance test. Middle panel is coated with a well-known enamel, right panel with a leading lacquer.*

TUFF FAST-DRY ENAMEL provides three important advantages over present coatings: It goes on faster. Looks better. Stands up longer. Designed for metal or wood, TUFF Fast-Dry Enamel is ideal for coating or re-coating diesels, cars, track and signal equipment, bridges and buildings.

TUFF EPOXY SYSTEM

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PRODUCTS

TUFF gives 800 square feet coverage per gallon, more than that of leading competitive epoxy systems. Mixing and using TUFF is easer, too, thanks to tolerant component ratios (1:1 or 2:1) and long pot life (16-48 hours). Painters say TUFF Epoxy is as easy to apply as conventional one-component paint.

Both of these new TUFF coatings are available as complete systems with rust inhibitive primers. For samples and technical literature, write H. B. FINCH, MANAGER, Freight Liner Products.

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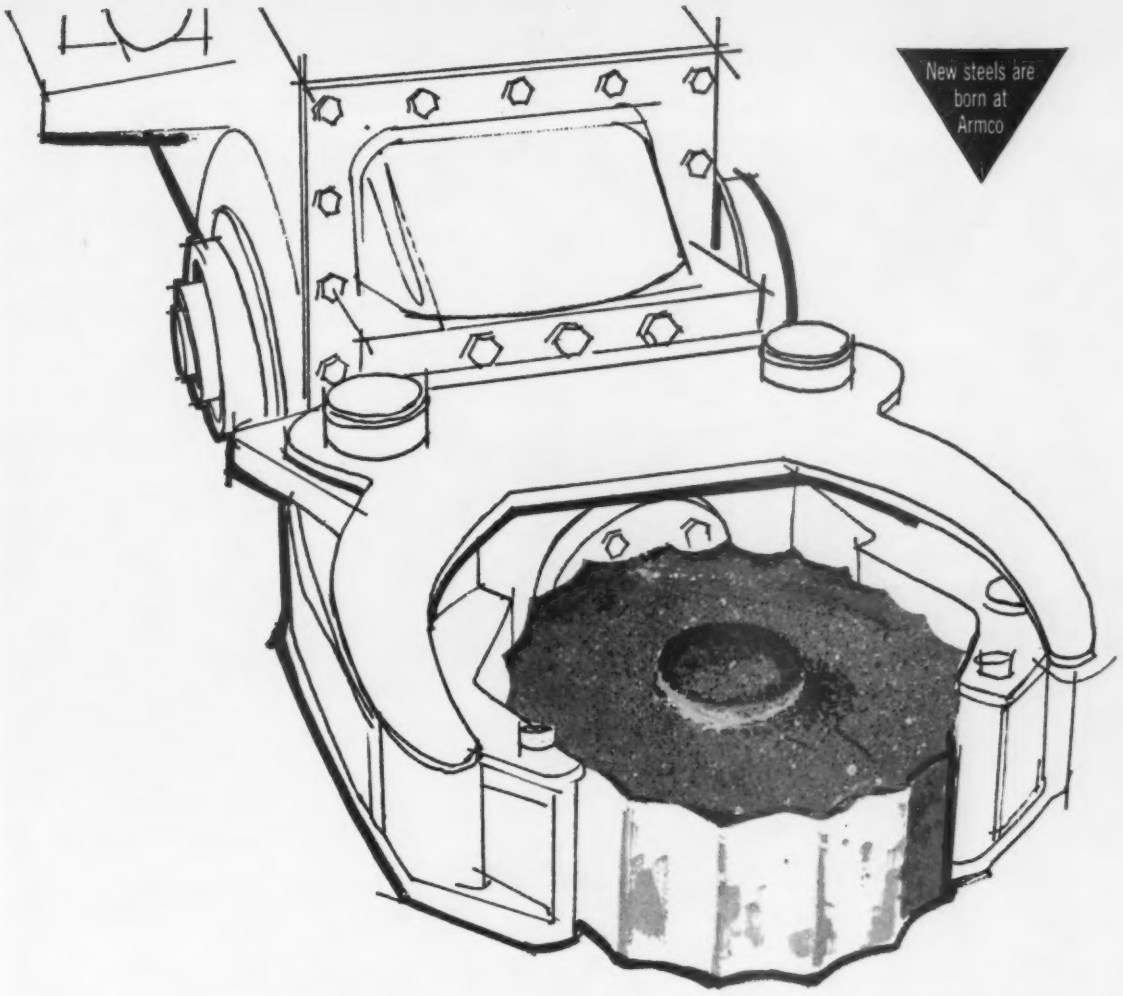
753 INVESTORS BUILDING
MINNEAPOLIS 2, MINNESOTA



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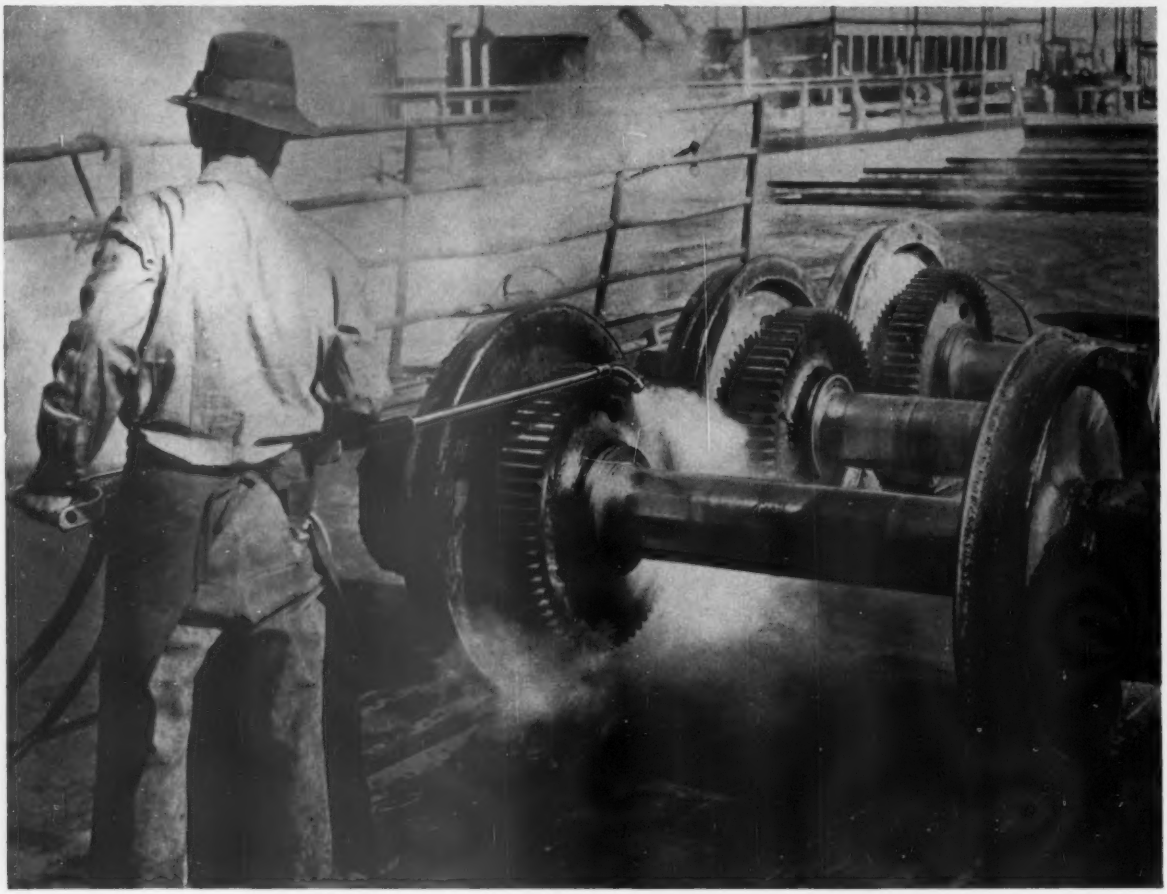

...Hurriclean® Steam-Detergent Gun makes short work of tough cleaning jobs

POWER-UP for the hard jobs of cleaning with the Oakite Hurriclean Steam-Detergent Gun and you'll save money as well as work.

This mechanized muscle-saver uses jet-action to blast dirt and grime. Finest unit of its kind, and the fastest, it strips off soils in *seconds*. It's lightweight . . . only 6½ lbs. It's easy to handle . . . a twist of the barrel aims nozzle at the critical spot, even "up and under." It's safe . . . always cool to the touch.

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RAILWAY
LOCOMOTIVES
AND
CARS

America's Oldest Trade Paper
November, 1961—Vol. 135, No. 11

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REPORT FOR NOVEMBER

ASME Winter Annual Meeting

The Winter Annual Meeting of the American Society of Mechanical Engineers will be held at the Statler Hilton Hotel, New York, November 26-December 1. At a Fuels Session on Monday, November 27, three papers will be presented on the Thawing of Frozen Coal in Railroad Cars. The program for the Railroad Sessions on Wednesday and Thursday, November 29 and 30, is as follows:

WEDNESDAY, NOVEMBER 29
2:30 p.m.

Progress in Railway Mechanical Engineering 1960-1961.

Unusual Ventilating System Characterizes General Electric's New 2,500-Hp Diesel-Electric Locomotive — J. C. Aydelott, General Electric Co.

A Comprehensive Engine Cooling System for Diesel-Electric Locomotives—J. C. Aydelott and W. W. Peters, General Electric Co.

THURSDAY, NOVEMBER 30
9:30 a.m.

Relation of Wheel-Tread Wear and Brake-Shoe Wear — J. R. Jennings, general manager, Wilson Car Lines, Division of Wilson & Co.

Freight-Car Center-Plate Lubrication — W. H. Cyr, chief mechanical engineer, Canadian National.

Design and Testing of a Self-Supporting Aluminum-Covered Hopper Car — R. A. Campbell, manager development division, Railway-Marine, Aluminum Company of Canada, and J. H. Jenks, Aluminium Laboratories Limited.

2:30 p.m.

The Barber Cushion Tube — R. C. Williams, chief engineer, Standard Car Truck Co., and S. G. Guins, assistant director of research, Chesapeake & Ohio.

The Design of Cushioning Gears for Rail Car Applications — R. L. Hassenauer, General American Transportation Corp., and G. E. Novak.

British Railways Experimental Brake Van (Caboose) — B. T. Scales, British Transport Commission.

ASTM Changes Name

The name of the American Society for Testing Materials has been changed to the American Society for Testing and Materials, the word "and" in the name placing added emphasis on the Society's research work in seeking knowledge of the nature of materials.

Mechanical Association Officers Elected for 1962

The 1962 meetings of the Coordinated Mechanical Associations will be held at the Hotel Sherman, Chicago, September 17, 18 and 19. Officers elected during the recent meetings of the associations are:

AIR BRAKE ASSOCIATION. *President*—T. H. Bickerstaff, general supervisor air brakes, Santa Fe; *first vice-president, assistant secretary and assistant treasurer*—J. H. Russell, superintendent air brakes and steam heat equipment, New York Central System; *second vice-president*—C. W. Parker, chief mechanical engineer, Canadian Pacific; *third vice-president*—E. Pope, chief traveling diesel supervisor, Southern Pacific; *secretary and treasurer*—J. B. Ball.

CAR DEPARTMENT OFFICERS ASSOCIATION. *President*—H. L. Price, mechanical assistant-car, Santa Fe; *vice-presidents*—C. W. Kimball, chief of car inspection, Southern; E. W. Morris, engineer car equipment, Canadian Pacific; G. J. Flanagan, general mechanical superintendent-car, New York Central System; D. C. Graves, vice-president, Union Tank Car Co.; *secretary-treasurer*—E. W. Gebhardt.

LOCOMOTIVE MAINTENANCE OFFICERS ASSOCIATION. *President*—R. E. Harrison, manager, maintenance planning and control, Southern Pacific; *first vice-president*—C. A. Love, chief mechanical officer, Louisville & Nashville; *second vice-president*—

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TIME SAVING IDEAS FOR NOVEMBER

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Personal Mention 42
Supply Trade Notes 43
Trade Publications 45

Bob Moore, SKF Railway Sales Engineer, tells...

How SKF® "EXPEDITER" Roller Bearings minimize car maintenance and inspection costs

"We faced the facts of freight car journal bearing life when the SKF 'Expediter' was designed. (1) We recognized that the wider use of roller bearing-equipped cars would focus greater attention on inspection and maintenance. (2) Only a journal roller bearing designed to eliminate the necessity for removing wheels and axles from under the car, breaking press fits and disassembling the bearings, could provide the economy desired. These vital considerations were provided for in the SKF 'Expediter.'

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You can get more details on how SKF 'Expediter' freight car roller bearing assemblies cut maintenance and inspection costs by contacting Bob Moore in Chicago or by calling the SKF Railway Sales Engineer near you. Or, if you prefer to see some literature first, write: SKF Industries, Inc., Front Street and Erie Avenue, P. O. Box 6731, Philadelphia 32, Pa.

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SKF MOTION ENGINEERING

Advanced ball and roller bearing technology

"RL&C... Furnishes information that management of Coast Line could not provide in any other way."

"Railway Locomotives and Cars has proven an extremely valuable publication, particularly in keeping our on-line mechanical and electrical officers and supervisors up-to-date. It furnishes information on their particular work in a manner that the management of Coast Line could not provide in any other way. A supervisor becomes a better man when he is well-informed of the progress in his particular line in the industry and you can well imagine the difficulty which would be encountered were management to attempt this job."

J. W. HAWTHORNE
CHIEF MECHANICAL OFFICER
(Chairman AAR Mechanical Division)

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New compact PUMP for airless spray painting

now spray direct from 55-gal. drums

This new Binks Model 41-8881 compact pump mounts directly into the bung of original 55-gallon containers . . . eliminates the cost of transferring material to another container before spraying.

The pump is designed for single gun airless spraying of protective and decorative coatings. All parts—which come in contact with the fluid being sprayed—are made of non-corrosive stainless steel. Parts subject to wear are of a special, hardened stainless steel.

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Bulletin A41-24 tells all . . . Ask your Binks distributor for a copy. He also can give you complete information on Binks pumps best suited to your operation. Or, write to the address below.

Ask about our spray painting school. Open to all . . . NO TUITION . . . covers all phases.

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Binks Everything for spray painting

Report

(Continued from page 5)

H. N. Chastain, general assistant mechanical department, Santa Fe; *third vice-president*—J. J. Ekin, superintendent shops, Baltimore & Ohio; *fourth vice-president*—C. L. Hall, assistant general mechanical superintendent-locomotive, New York Central; *secretary-treasurer*—C. M. Lipscomb.

RAILWAY FUEL AND OPERATING OFFICERS ASSOCIATION. *President* — W. P. Primm, road foreman of engines, Pennsylvania; *first vice-president*—Glen Billingsley, general road foreman of engines, Missouri Pacific; *second vice-president*—L. M. Leikel, road foreman of engines, Baltimore & Ohio; *third vice-president*—N. C. Sweetin, road foreman of engines, Frisco; *secretary-treasurer*—L. H. Peters.

Load-Limit Increase Deferred

A proposed increase of 5% in all freight-car load limits without changing axle designs, submitted for letter ballot after the June session of the AAR Mechanical Division, has been referred back to the General Committee for further consideration. While the load-limit increase failed to win the approval of car-owning members of the Division, they did approve the other 45 propositions in the letter ballot (RL&C, July 1961, p 23).

Among these is the ban on cast-iron wheels under interchange freight cars which will be effective on January 1, 1968. It will not be permissible to install wheels of this type manufactured after 1963. Called an "orderly" elimination plan when proposed, the proposition drew 44,100 negative and 1,845,406 affirmative votes. There was no opposition to a proposal for altering Interchange Rules 7, 8, 93, and 96 to permit mechanized billing covering interchange car repairs.

The Division has developed revised standards for box car doors and for the interior dimensions, end wall thickness, and sizes of ends, sides and roofs in the interest of simplification and standardization. It will also be required that the exact height and width of box-car door openings be stencilled on the exteriors of the doors for the convenience of shippers.

Another new standard applicable to all freight cars is the new Mechanical Division Plate B-1 showing maximum width for cars having various truck centers up to 75 ft (RL&C, August 1961, p 18).

A new requirement that threadless pipe type flange air brake fittings be used as replacements in maintenance will be effective in Interchange Rule 3 on January 1, 1962. Also adopted is Specifications for Two-Piece Rivets Suitable for use in Application of U. S. Safety Appliances as a recommended practice. New specifications for locomotive fuel oil filter elements of the throw-away type used on the discharge side of locomotive fuel transfer pumps were also accepted.

Hot Box Statistics

Hot Box Statistics recently issued by the AAR Mechanical Division show the best June performance over any of the past 11 years during which these figures have been

(Continued on page 42)

Orders and Inquiries for New Equipment

Placed Since Closing of October Issue

Locomotive Orders

FRISCO. *General Electric:* 8 U25B diesel units. Deliveries begun November 1.

Freight-Car Orders

CANADIAN NATIONAL. *ACE:* 200 50-ton box cars. For September delivery.

NORFOLK & WESTERN. *Company shops:* 1,000 85-ton coal hopper cars. Cost, $12,000,000. Work to begin on new cars about Jan. 1.

SOUTHERN. *Magor Car:* 200 aluminum high-capacity covered hopper cars. Volume capatons. Cost, $4,800,000. Deliveries to begin this city 5,000 cu. ft; weight-carrying capacity 100 month.

TRAILER TRAIN. Contracts for purchase of 600 cars, including piggyback and cars for auto-rack service (RL&C, Sept. p 7) awarded as follows: *ACF*, 153; *Bethlehem Steel*, 69; *GATZ*, 13; *Pullman-Standard*, 365.

UNION PACIFIC. *ACF:* 10 85-ft Hitch Hiker piggyback flat cars, specially adapted for transport of solid fuel missiles and equipped with newly developed cushion underframe. Cost, $265,000.

WABASH. *Paragon Bridge & Steel:* 165 tri-level auto racks.

Notes and Inquiries

Canadian National will convert 250 end bunkers to heated box cars at company shops by mid-1962.

Delaware & Hudson, during the first nine months of 1961, has upgraded 1,750 box cars at an estimated cost of $100 each and 1,300 hopper cars at an estimated cost of $48 each. Six 1,500-hp diesel-electric locomotives have been converted to 1,800-hp units at a cost of $744,000, excluding trucks which were remanufactured by the railroad and supplied to the manufacturer for application.

Louisville & Nashville will spend $1,725,000 to rebuild 500 50-ton hopper cars in company shops; $688,000 to purchase 55 jumbo 70-ton covered hopper cars, $153,000 to install metal covers on 32 gondolas, and $69,000 to install bulkheads on 49 flat cars.

New York, Susquehanna & Western, in an application filed with ICC, is seeking a government guaranty of a $555,000 loan to purchase three 1,800-hp diesels from Electro-Motive. Acquisition, road says, would permit retirement of six old locomotives and bring savings estimated at $108,000 a year.

Philadelphia Passenger Service Improvement Corp. has "tentatively" accepted bids from Budd Co. for construction of 36 passenger cars at a total cost of $9,186,500. Included are 24 stainless-steel, electric MU cars costing $6,186,000, with final approval contingent on completion of leasing arrangements with the Pennsylvania and Reading. (RL&C, Sept., p 7); and for lease to the Reading, 12 RDC cars costing $3,000,000 with approval awaiting completion of financing arrangements.

Santa Fe will acquire 100 8x8x20-ft containers and 25 specially equipped flat cars for containerized mail handling.

Trailer Train directors have authorized purchase of 650 new cars, in addition to 600 listed above.

Aluminum plate, extrusions, and castings have been used in the first of 40 new 90-ton aluminum covered hopper cars delivered to the Louisville & Nashville by Pullman-Standard. Based on PS-2 covered hopper design, the aluminum units have a light weight of 53,000 lb—more than 10,000 lb lighter than an all-steel car of similar design. According to the L&N, the cars will be assigned to alumina service. Because alumina is loaded hot, high-strength, weldable aluminum alloy 5454 was chosen for all plate and extruded parts. Approximately 10,500 lb of Alcoa aluminum are used in each car for all parts which come in contact with lading. The PS-2 aluminum cars are designed for a capacity of 3,506 cu ft and equipped with 90-ton trucks. They are 51 ft ¾ in. over strickers; 10 ft 6¾ in. wide, and 13 ft 3⅝ in. high.

An experimental car with 18-ft door openings fitted with two 9-ft sliding doors on opposite sides has been built by the Bangor & Aroostook "especially for carrying finished lumber in strapped packages and other bulky commodities adapted to mechanical loading with fork lifts." The car, converted at the road's Derby, Me., shops, was a steel box car of 40 ft 5 in. inside length, 9 ft 2½ in. inside height, and 9 ft 1½ in. inside width. Two steel stanchions in each 18-ft doorway keep the load in place during transit but telescope and fold away during loading. Center and side sills are heavily reinforced to compensate for removal of steel for the extra-wide doors. Initial experience indicates that the car can be mechanically loaded in about 70 min as compared to manual loading time of from 16 to 18 man-hours.

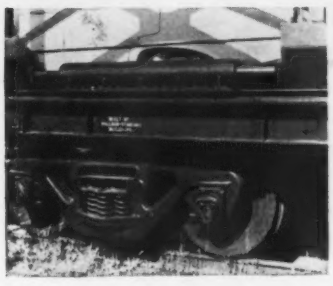
NATIONAL CUSHIONING SYSTEM FOR AUTOMOBILE RACKS

*Acceleration of Auto Rack 60% lower than Flatcar at 8.5 mph impacts.**

As a Leader in design of shock absorption devices, National has developed a special cushioning system, using proven components, that provides four important advantages for automobile transportation:

1. Auto rack acceleration 60% lower than freight car body acceleration at 8.5 mph impacts*
2. Positive *re-centering* of rack on car
3. Economy of spring-rubber combination over all-rubber devices
4. Impact tested under actual operating conditions

National Cushioning System-equipped automobile racks are now in service. Automobile racks present unique problems in cushioning that cannot be solved with conventional shock-absorbing devices. We suggest that you consult National now for full details.



*Auto manufacturer's test data shows that auto rack acceleration was 60 to 65% lower than car body acceleration at 8.5 mph impacts.

National cushioning units for automobile racks consist of four separate tubular housings, one at each corner of the car, with plungers contacting vertical beams of the rack. Two housings at one end contain rubber pads similar to those used in National rubber draft gears; two housings at opposite end each contain four inner and outer steel coil springs of the same type now used in the improved National M-17-A draft gear. A-4631A

Transportation Products Division

International Division
Cleveland 6, Ohio

National Castings Company of Canada, Ltd.
66 Portland St., Toronto 2B, Ontario

NATIONAL CASTINGS COMPANY
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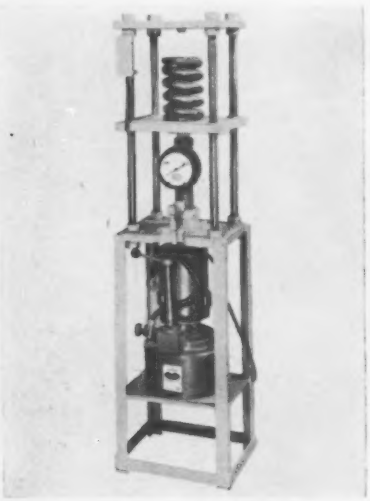
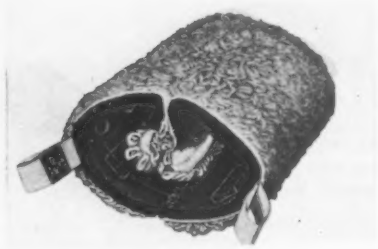


Spring Testing Machine

A railroad spring testing machine, developed in connection with the spring condemning limit program approved by the AAR, replaces visual examination. It is said to provide a fast, accurate method of determining the effectiveness and usability of freight car truck springs after they have been in service. The tester is powered by a Ram-Pac electric hydraulic pump with a specially designed gage with measures 5,500 and 2,200 lb, respectively, for outer and inner springs. The load on the spring is produced with a Ram-Pac ram. To operate, the switch and control handle on the pump are turned to the "on" position, which forces hydraulic fluid into the ram, causing the plunger to raise and exert a constant force on the spring. This is accomplished in less than 30 sec. The pump can be set at the valve for either a constant 5,500-lb or 2,200-lb load so that assembly line testing is possible. *Duff-Norton Co., Dept. RLC, Pittsburgh, Pa.*

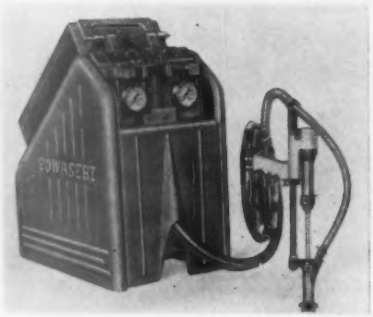


Journal Lubricator

A tempered torsion spring assembly in the improved Jet journal lubricator is said to assure positive contact of the surfaces at all temperatures and to increase durability. The center feed principle is used, a wick providing a greater flow of oil to the journal. The contact surface is chenille which is locked with the felt backing to prevent raveling. The felt serves as an additional oil reservoir. No anti-rolling device is needed to hold the lubricator in position. The lubricator has been approved for test by the AAR. *Lubrication Products Co., Dept. RLC, 5605 Herman ave., Cleveland 2, Ohio.*

Wide Flange Beams

Eleven wide flange beam sizes have been added to the USS line of rolled structural shapes made from quenched and tempered alloy steels (RL&C, Aug. 1961, p 10). Shapes for railroad commuter cars are among the orders received since the new USS T-1 and T-1 type A steels were announced in May. *United States Steel Corp., Dept. RLC., Pittsburgh 30, Pa.*

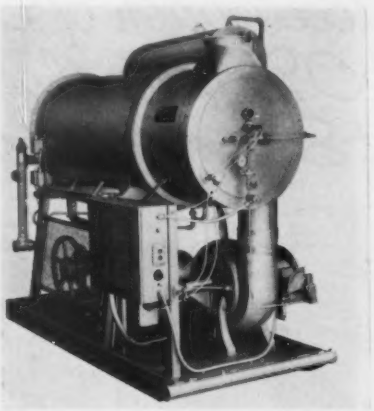


Feeder Unit for Automatic Nailers

Nails from ½ to 4 in. length with any type of shank head and point, and ½- to 2-in. screws are handled in the new feeder unit developed for Powasert portable, automatic nailing and screwdriving machines. Nails or screws are dumped from bulk containers into a tray where they are automatically aligned, point first, and fed one at a time through a transparent, flexible hose to the gun or driver unit. Air at 90 lb pressure is the only power used for aligning, feeding, and driving the fastener. Nails may be driven flush or counter-sunk. Screws usually require no pilot holes, even in hard wood. *United Shoe Machinery Corp., Dept. RLC, 140 Federal st., Boston 7, Mass.*

High Capacity Oil Heaters

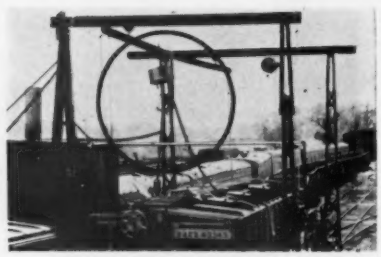
Three models—a 300,000 Btu/hr unit, a 7,000,000 Btu unit and 13,000,000 Btu/hr unit—have been added to the Hi-R-Temp hot oil heater line. According to the manufacturer, temperatures of 600 deg F are



obtained by heat transfer oils without high pressures associated with steam plants. The units are said to modulate automatically, require no water treatment, eliminate problems due to freezing or corrosion, and are completely unitized. *Vapor Heating Corp., Dept. RLC, 6420 West Howard st., Chicago 48.*

Liquid Detergent

Speedet, a heavy duty liquid detergent, is for removing road dirt, oil and grease from running gear, trucks, underframes, fuel and water tanks, and interiors and exteriors of diesel units. It is effective in dilutions as low as 1 to 40 parts of cold water and is said to leave surfaces in a non-tacky, film-free condition. Because no solids can accumulate or precipitate out in solution tanks, clogging of spray nozzles is avoided. *Oakite Products, Inc., Dept. RLC, 146 Rector st., New York 6.*



Car Interior Cleaning

Out-of-service time of tank and covered hopper cars is said to be considerably reduced through the use of the RX jet wash system for cleaning car interiors. It is a high-pressure spray unit which permits cleaning pressures up to 400 psi at temperatures up to 385 deg F, with virtually any combination of cleaning agents—steam or hot water with chemicals, detergents, or oil.

(Continued on page 45)

THE SANTA FE'S FAST FREIGHTS KEEP EXACTING SCHEDULES WITH AN ASSIST FROM NATIONAL BRUSHES

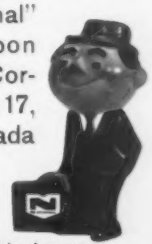
TRADE-MARK

Progressive railroads like the Santa Fe are using fast freights for improved, accelerated service for their customers. This modern service requires trouble-free motive power with minimum lost-time for maintenance.

Every component in the complex locomotive—no matter how small or large—must perform dependably under conditions of heavy loading and high speed to meet the exacting requirements of the Santa Fe.

"National" generator brushes—small but vital components—offer proved commutation and life qualities and operate with the reliability so necessary for today's progressive railroad service.

One of our contributions to improved railroading is a positive service program on carbon brushes. Just call your "National" Brush Man or write National Carbon Company, Division of Union Carbide Corporation, 270 Park Avenue, New York 17, N.Y. In Canada: Union Carbide Canada Limited, Toronto.



Contact your "National" Brush Man

UNION CARBIDE

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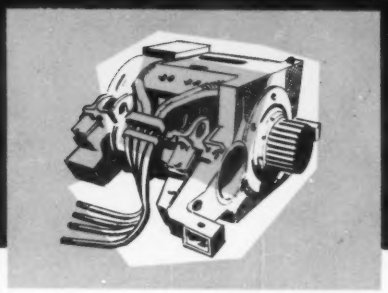
NATIONAL CARBON COMPANY

N. Y. CENTRAL'S "SUPER-VANS" KEEP PRECISE SCHEDULES WITH AN ASSIST FROM NATIONAL BRUSHES

TRADE MARK



Because of fast freights or "Super-Vans" as they are known on the New York Central, today's major tonnage is returning to the progressive railroads of the nation.

To maintain precise schedules, every component in the consist—no matter how large or small—must offer exacting performance and rugged reliability.

"National" traction-motor brushes—wherever they are used—provide dependable life and commutation and thereby contribute to added miles with a reduction in commutator maintenance costs.

To National Carbon Company, improved railroading means a positive program to help the roads solve problems imposed by constantly changing and more difficult electrical conditions. To realize this assistance, just call your "National" Brush Man or write National Carbon Company, Division of Union Carbide Corporation, 270 Park Avenue, New York 17, N. Y. In Canada: Union Carbide Canada Limited, Toronto.

Contact your "National" Brush Man

UNION CARBIDE

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EDITORIALS

The Safest Railroad

The Hydroframe-60 box car, a Pullman-Standard develment which includes the long-travel, hydraulically cushioned underframe, has come under the fire of the railway brotherhoods. The Brotherhood of Railway Trainmen, the Order of Railway Conductors and Brakemen, and the Switchmans Union of North America have joined in filing a statement with the ICC charging that these cars are in violation of Safety Appliance statutes and regulations. They urged that use of these cars be prohibited.

Six specific objections have been raised by the brotherhoods to the design (RL&C, January 1961, p 17 and September 1961, p. 65). These objections refer to the distance between coupled cars when one or both are of the Hydroframe-60 type, to the aligning and operating of couplers, and to the handbrake location. The unions' statement continued: "Pullman-Standard and the AAR state the concern of the railroad industry with the $100,-000,000 which the industry pays annually to property damage claimants. The primary object of the Hydroframe-60 car is to reduce these damages. Neither protestant mentions the fact that the industry also pays $100,-000,000 yearly in personal injury claims." The statement went on to describe the casualties which produce these injury claims, concluding "The Hydroframe-60 box car design, violating as it does both the safety statutes and the safety regulations, will increase these statistics tragically if it is permitted to be placed in use on the American railroads."

Union Tank Car Co. has just concluded a similar and protracted argument over the elimination of side running boards on one type of tank car, its so-called "Hot Dog" design (RL&C, Sept. 1961, p 5). Here also members of the Railway Labor Executives Association protested long and loudly about the dangers inherent in a new car design.

Commenting this protest, the ICC stated: "Today, trainmen seldom traverse the tops of cars in road service, but may do so in emergency. In switching or yard service, they traverse cars whils running at slow speed, but generally descend to the ground when necessary to go from end to end of a car or cut of cars. While there is no prohibition against trainmen traversing the tops of cars or using running boards, railroads as a rule do not require them to do so and, in fact, discourage such action. It is practically impossible to traverse some cars, such as gondolas or hoppers, when empty, or when these cars are loaded with scrap coal, or gravel that does not afford stable footing.

"We are impressed," the Commission continued, "by the fact that nearly half of all freight cars—such as hopper, gondola, and flat cars—owned by Class I railroads in the United States are not equipped with running boards and are not required to be so equipped by the Safety Appliance Standards. This strongly indicates that running boards, at least on certain types cars, are not needed."

In the cases both of the Hot Dog and Hydroframe-60, car designers have been attempting to provide the equipment which can make railroads truly competitive, probably insuring ultimately that there will even be a railway industry. It is strange that those railway unions which frequently accuse carriers of failing to take steps to maintain their competitive position will take stands which may well prevent the railroads from doing so. Unless equipment designs and operating practices can be tailored for today's conditions, the ultimate in railway safety may be achieved by default—by drying up the very traffic which provides today's jobs.

Rather than prohibiting the use of Hydroframe-60, it would seem to be a good time to consider the elimination of running boards and side ladders on cars where they are not needed by shippers and consignees for loading and unloading operations. The AAR Mechanical Division has been considering the elimination of these safety appliances, and this might be the time to make such a proposal.

Locomotive Bonanza

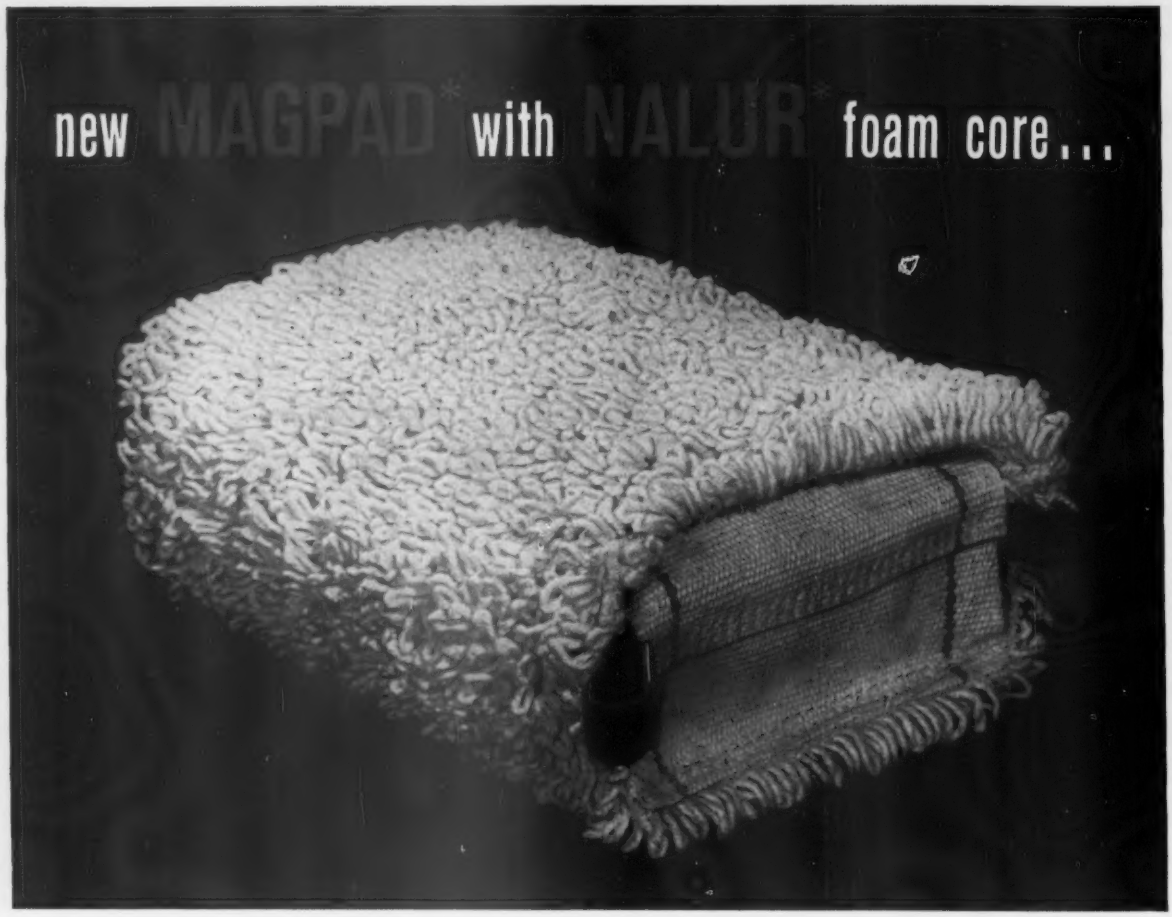
Motive power is in the news and the market place is being stocked with a variety of makes and models. This is a healthy situation for the buyers who are "in the market" for new power.

Elsewhere in this issue we describe the GP 30, the latest addition to the Electro-Motive line that was unveiled on October 18. This is a four-axle, four-motor unit rated at 2,250 hp. This means that all builders now have four motor road switcher type locomotives, rated at over 2,000 hp.

Then, even before the ship (due October 30) that was bringing the six Krauss-Maffei 4,000-hp diesel-hydraulics locomotives for delivery to the Southern Pacific and the Denver & Rio Grande Western had docked at Houston, Texas, another German firm came into the domestic diesel-hydraulic picture. On October 25 the Henschel-Werke GMBH of Kassel, West Germany, announced that "it will make available a 4,000-hp diesel-hydraulic to American railroads very shortly". This locomotive is "at present in the development stage and being built in close cooperation with the German Federal Railways."

Other domestic builders are busy, too. Alco has come up with the four-motor DL-721 and the six-motor DL-722 with the Alco 251C engine which the builder claims are the only units to deliver 2,000 hp with a 12-cylinder engine. And General Electric is getting a toehold in the domestic market with the recent news that eight U25B 2,500-hp units are going to the Frisco and eight to the Santa Fe, in addition to the four ordered earlier by the Union Pacific.

All this is good news to the railroads. The diesel fleets need revitalizing. And when a "shopper" needs something it's to the buyer's advantage to have several makes and models from which to choose.



a low-cost lubricator that also has internal wicking and lock-stitched tufted cover

The heart of the new MAGPAD is NALUR—a specially formulated acrylonitrile foam rubber developed and produced by National Lead Company. It is highly resilient, has low oil swell characteristics and excellent resistance to compression set at high temperatures.

Outer cover is a heavy high-quality chenille, lock-stitched to withstand a 10-lb. minimum pull on tufts. End closures are tough cotton belting.

Ample internal wicking is provided by 25-ply candlewick routed through ½" vertical orifices to provide unrestricted flow of oil.

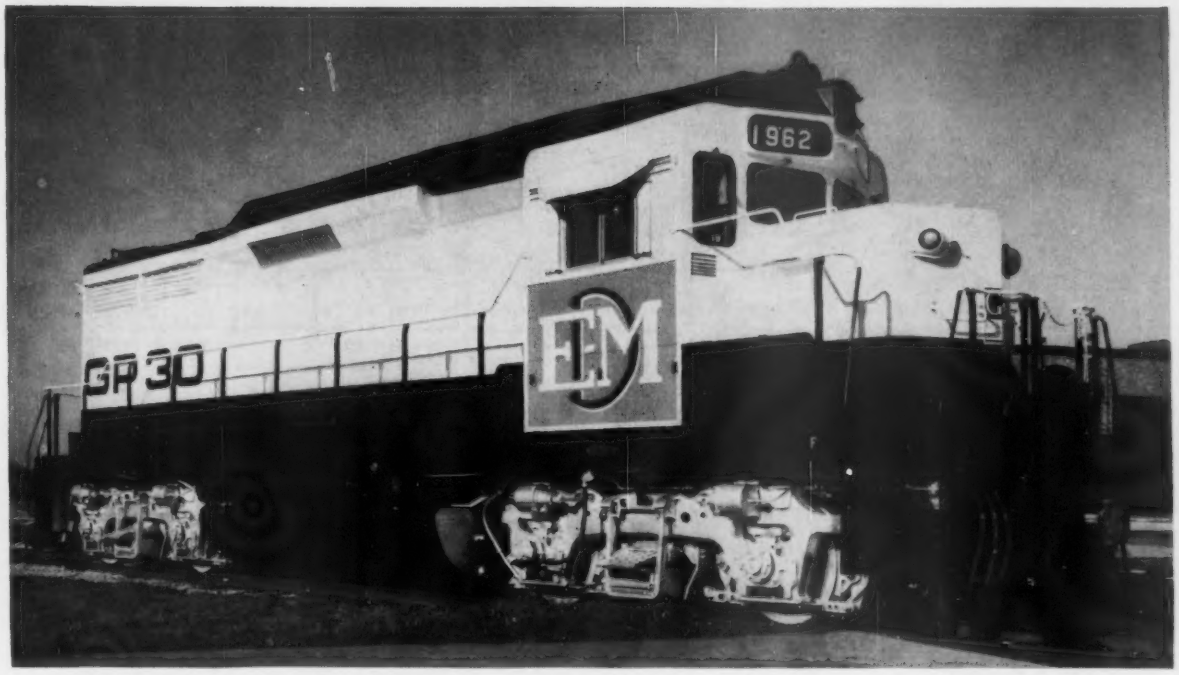
Renovation—The MAGPAD with NALUR is sturdily made—its rugged construction permits renovation by any standard method in railroad use.

Get the full story on the new *low-cost* MAGPAD with NALUR. Ask our representative or write for details. Magnus Metal Corporation, 111 Broadway, New York 6, New York or 80 E. Jackson Blvd., Chicago 4, Illinois.

**Trademark of National Lead Company*

MAGNUS METAL CORPORATION
Subsidiary of **NATIONAL LEAD COMPANY**

GEARED TO PROGRESS
RPI MEMBER



Latest General Motors locomotive is designed to handle full range of freight services from drag operations to high-speed schedules.

Four-Motor, 2,250-hp Model . . .

General Motors Introduces GP-30

The highest horsepower model of the General Motors General Purpose locomotive line was unveiled last month. The 2,250-hp, four-motor, four-axle GP30 was shown to railroad officers at the General Motors Technical Center at Warren, Mich., on October 18. Designed for a full range of services from heavy drag to high-speed freight operation, the locomotive has been described by GM as "the widest range locomotive on the rails today."

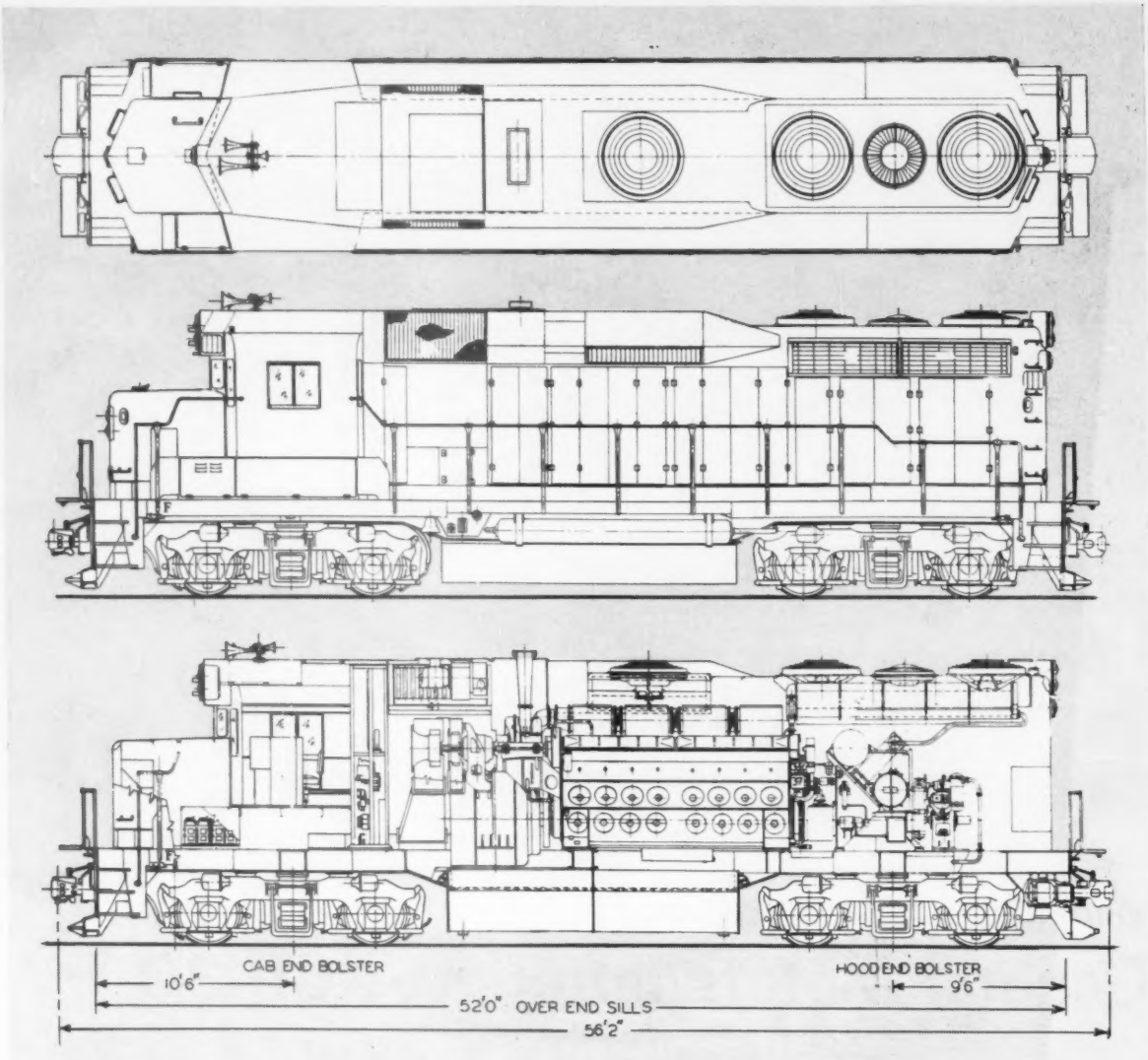
"While capacity has been substantially increased and the locomotive's range extended broadly both in low- and high-speed freight operation, the GP30 retains the flexibility and versatility of predecessor GP locomotives," Richard L. Terrell, vice-president and general manager of the Electro-Motive Division pointed out. "Improvements provide a further reduction in scheduled maintenance for the GP30 as compared with the GP20, the 2,000-hp locomotive introduced by EMD in May 1959. With some 30 structural and operational improvements, all aimed at increasing the locomotive's economic value, the GP30's increased capacity permits operation of present freight schedules with fewer units. Two new units replace three older, 1,500-hp locomotive units."

Prime mover for the GP30 is the GM 567-D3 diesel featuring a turbo-charger which is driven directly from the engine gear train at low engine speed but operates as a free-running turbine powered only by the engine's exhaust at higher speeds. This arrangement is designed to maintain engine efficiency at high altitudes with little or no reduction in rated horsepower. The GP30 features further improvement in specific fuel consumption as compared with the present turbo-charged GP20, it was pointed out.

The diesel engine is coupled to a D-22 main generator and D-14 alternator. Power is transmitted to the axles through four D-57 traction motors, a newly developed model capable of transmitting the higher horsepower at all locomotive speeds.

In addition to the new motors, other features of the locomotive include the following:

- Single package pressurized cooling system.
- Inertial-type air-filtration system, eliminating carbody filters.
- Improved running gear.
- Greater fuel capacity.
- Water-cooled air compressor with high-capacity crankcase.
- Sealed high-voltage electrical cabinet.
- Static load control and programming switch.
- Load regulator replaced by a small rheostat with elimination of many wearing parts.



Total loaded weight of locomotive on rails is 245,000 lb. Height over cab is 15 ft 1 in. Driving wheel diameter is 40 in.; rigid wheel base of truck is 9 ft. Supplies carried by locomotive: fuel—1,700 gal.; lubricating oil—220 gal.; cooling water— 227 gal.; sand—40 cu ft. Maximum speeds and corresponding gear ratios available are: 65 mph—62:15; 71 mph—62:15; 77 mph—61:16. EMD engineers say locomotives give 10% higher tractive effort at all speeds as compared with the GP20.

• Improved high-speed wheel slip control.

• Improved weight distribution and balancing of locomotive components.

The new D-57 traction motor has a 965-amp current rating as compared with the 900-amp rating of the D-47, the motor previously standard on most EMD road locomotives. New design features and assembly techniques are expected to increase motor life and reduce maintenance requirements.

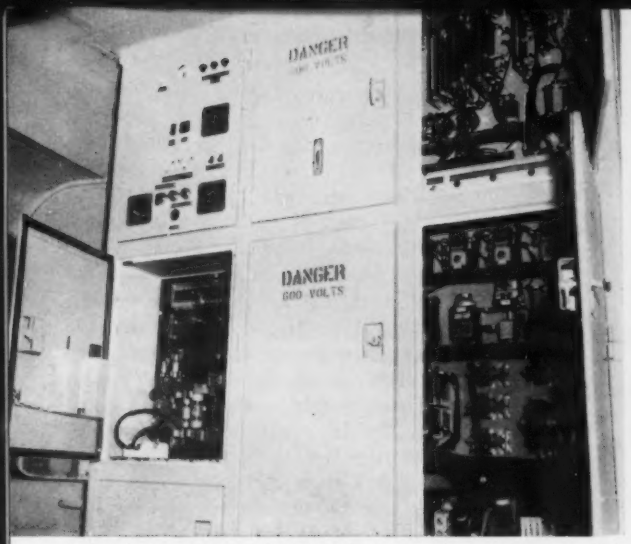
Improved commutator stability has been obtained as a result of improved high temperature seasoning. The armature is placed in a 200-deg oven and rotated during the seasoning operation.

In place of conventional phenolic wedges used to keep coils in place, the D-57 armature has special non-magnetic zig-zag steel wedging which improves the motor cooling characteristics. Modified silicone varnish used for the insulation has greater moisture and solvent resistance, more bond strength, and improved flexure characteristics.

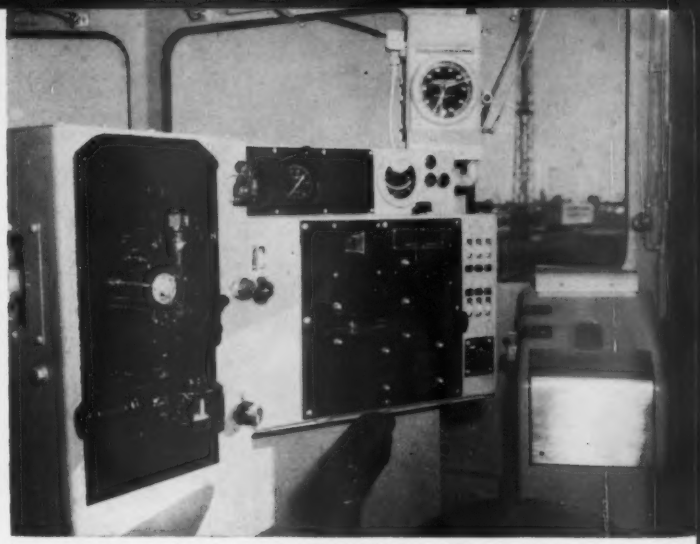
Brush holders with constant pressure springs are said to give 50 to 75% increased brush life. Spring action holds each brush segment in intimate contact with the commutator, reducing brush bounce which is a major factor in sparking and commutator bar burning. Non-conductive silicone rubber insulating boots over the brushholder studs practically eliminate tracking.

The new traction motor gear case has a wide gutter with a return duct, permitting grease to drain back into the gear case instead of to the roadbed. The gear case can also absorb an overcharge of grease without purging lubricant through the axle seals.

Traction-motor support bearings, equipped with four felt flange lubricators, are said to produce a 50% increase in bearing flange life. Lateral movement of the axle or traction motor causes the wheel or gear hub to contact the oil-saturated felt strips, applying the proper amount of lubri-



High voltage cabinet in GP-30 which is normally sealed is opened to show newly developed static load control and programming switch.



Unitized control stand combines air brake and locomotive controller in one panel, simplifying locomotive operation for enginemen.

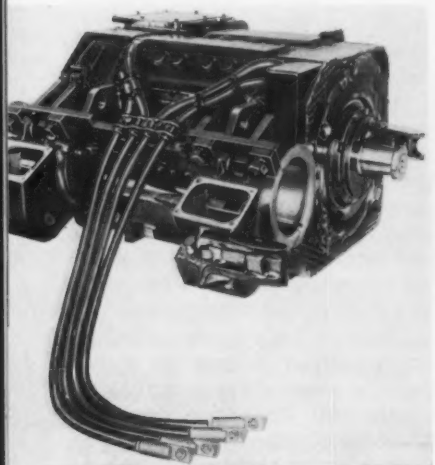
cation. Wheel rotation spreads this oil in a thin film over the entire face of the flange. According to EMD engineers, this design has already been successfully tested on freight, passenger, and road switching locomotives.

The electrical controls system for the GP30 includes three principal innovations: static main generator excitation; a programming switch for making traction motor connections, and dual-purpose feedback power control. The static excitation system for the D22 main generator utilizes a magnetic amplifier to regulate current for the generator's separately excited field. It makes possible fast loading of the main generator for switching operations. A-C current, supplied by the D-14 alternator, is rectified for main generator excitation. D-c current for this excitation has previously come from the auxiliary d-c generator through the load regulator, a large heavy-duty rheostat. In the new system, a 3-in. rheostat performs this function.

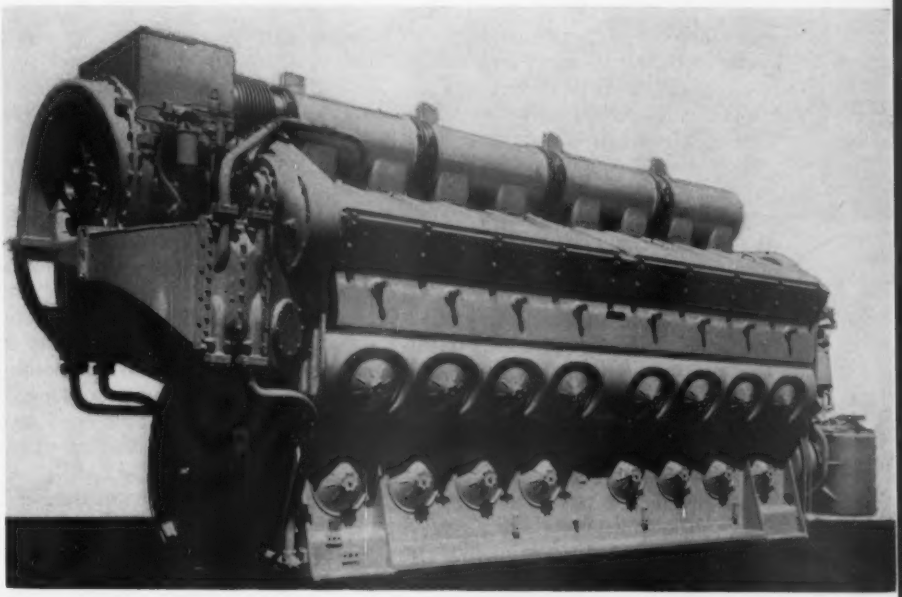
Increased main-generator excitation is necssary to produce the higher horsepower output. Upper limit for the alternator is 170 volts as compared with the 74-volt limit of the auxiliary generator. The alternator can deliver 55 amp through the separately excited main generator field on a continuous basis.

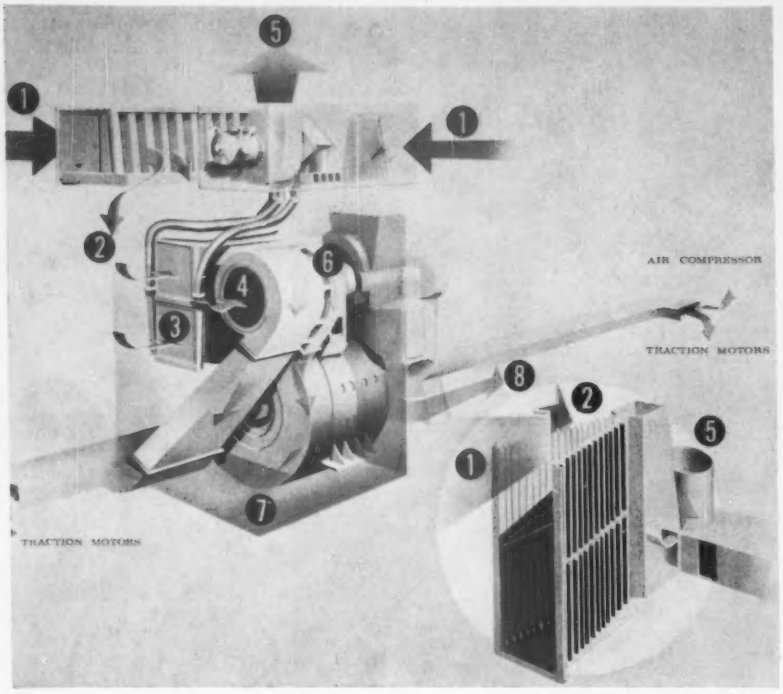
In addition to the increased excitation range, static-load-control limitation of tractive effort at lower speeds is said to produce faster response to wheel slips and quicker recovery afterward. Eliminated is the time lag involved in having the load regulator away from and back to its full-load position. This should reduce wheel slip and make for more effective use of tractive effort than would be possible with constant limiting of horsepower.

With the static control system, dynamic braking effort has been increased 30% by placing the brake limiting regulator in the low-power drive circuit of the magnetic amplifier. This circuit requires only 50 milliamps, or 1/30 the current previously needed. The regulator was formerly in the shunt field circuit, drawing 1.5 amp. The change makes it possible to increase generator output from 600 to



High capacity D-57 motor has greater current rating because of advancements in insulation processing and changes in design and assembly of mechanical components. Prime mover is latest model of 16-cylinder 567-D3 turbocharged engine originally introduced two years ago.





Outside air enters central air filtering system (1) and is cleaned in inertial separator. Clean air (2) then passes into secondary filter (3) and to blower (4) which delivers it to traction motors and air compressor. Dirt is discharged out top of locomotive (5). Generator blower (6) supplies cooling air for main generator; this is discharged into partitioned engineroom (7) where it acts to pressurize this compartment (8), excluding dirt and snow.

975 amp, increasing traction-motor excitation. Engine speed is raised from 435 to 595 rpm during braking to provide added traction-motor cooling. Brake grid resistance has been increased from 0.66 to 0.86 ohm.

The magnetic amplifier and load regulator rheostat are simpler in construction and require substantially less maintenance and less power than the load regulator previously used. The rheostat requires 75 milliamps as compared with the 45 to 60 amp for the conventional load regulator.

The new programming switch is motor driven and cam operated. It makes possible six motor field shunting steps using only three contactors, separately or in combination, rather than the six contactors formerly used. The programming switch is driven by a high-speed, low-power motor geared down at the cam drum. The switch moves through 36 deg for each transition position. Because transition steps are programmed immediately when the switch comes to a position, there is a minimum loss of power.

The dual-purpose feedback power control makes it possible to operate the GP30 with the older, less powerful locomotives in any combination or without danger of overloads. A by-product is the marked improvement in adhesion for drag loads on ruling grades. Rated horsepower is also obtained even when operating at high ambient temperatures when the weight of the fuel per unit volume is lower than normal. Conversely, the feedback control provides protection against excessive horsepower under extremely favorable conditions.

The control consists of two transductors in a magnetic amplifier circuit, one of which supplies a feedback signal proportional to traction generator voltage, and another supplying a feedback signal proportional to traction motor amperage. These signals are added and compared with the 74-volt output of the auxiliary generator. When the sum of the two feedback signals exceeds the auxiliary generator voltage, current in the separately excited generator field is limited. There are two transductor settings. One is operative when the traction motors are in series-parallel during low-speed operation on grades; the second becomes effective during shunting when horsepower must be limited.

Other changes in the electrical apparatus include a push-button emergency fuel cut-off which stops the fuel pump and energizes a stop valve in the governor, and alteration of the fuel pump motor connection so it is across the auxiliary generator where it will stop immediately if the engine stops. The turbocharger lube-oil pump now starts automatically when the engine is started, supplying oil to the turbine bearings immediately. When the engine is shut down, the pump continues to operate for 15 min to remove heat from the turbine bearings.

The new central air filtering system eliminates filter maintenance and increases the efficiency of all locomotive components that use air, according GM engineers. Engine, generator, and traction motors are supplied with clean, oil-free, ambient air under all operating conditions.

All conventional carbody filters on the locomotive are eliminated, being replaced by a self-cleaning inertial type filter. Secondary filtration for the engine is provided by a centrifugal filter which is also self-cleaning. This combination eliminates all filter maintenance, except annual inspections.

The central air system provides pressurized air for the engine room, keeping out snow and dust. There is no need for winterization of the locomotive air intake.

Air is admitted at the top of the locomotive on both sides where airborne dirt is at a minimum. The air passes through rows of filters which separate dirt from the air by inertia. Engine combustion air receives a secondary filtering in centrifugal filters. Dirt separated by the inertial and centrifugal filters is forced out through the roof by a small motor-driven blower. Clean, cool air for the traction motors and air compressor is supplied through ducts by a mechanical blower.

A blower provides filtered ventilation for the main generator. Because the engineroom is partitioned at the generator, air coming out of the generator serves to pressurize the engine compartment. Clean, ambient air is also supplied to the sealed high-voltage cabinet, assuring dust-free operation of its electrical components.

Clean air for traction motors and air compressor is supplied through ducts by a second mechanical blower driven from the engine crankshaft. This blower replaces the four separate traction-motor blowers with the a-c motor drives used on previous locomotives.

The pressurized cooling system in-

(Continued on page 36)

Inspection produces complete report of car's condition.

Class of repair required is indicated by shopped car card.

Data from inspectors' reports is summarized and analyzed by Datamatic computer.

Computer Keeps B&O Car Repair Data

A major freight-car repair program which Baltimore & Ohio President Jervis Langdon, Jr., calls "the key to B&O's future" has just moved into full operation at five of the road's car shops. Intended to repair selectively the accumulation of unserviceable B&O cars and cars currently becoming unserviceable so that the road can be assured an adequate car supply for future needs, the program represents a coordination of efforts by the Mechanical, Operating, Finance, Methods Research, and Data Processing departments. The large quantity of data needed to implement this extensive repair program is accumulated and tabulated by the road's Datamatic computer.

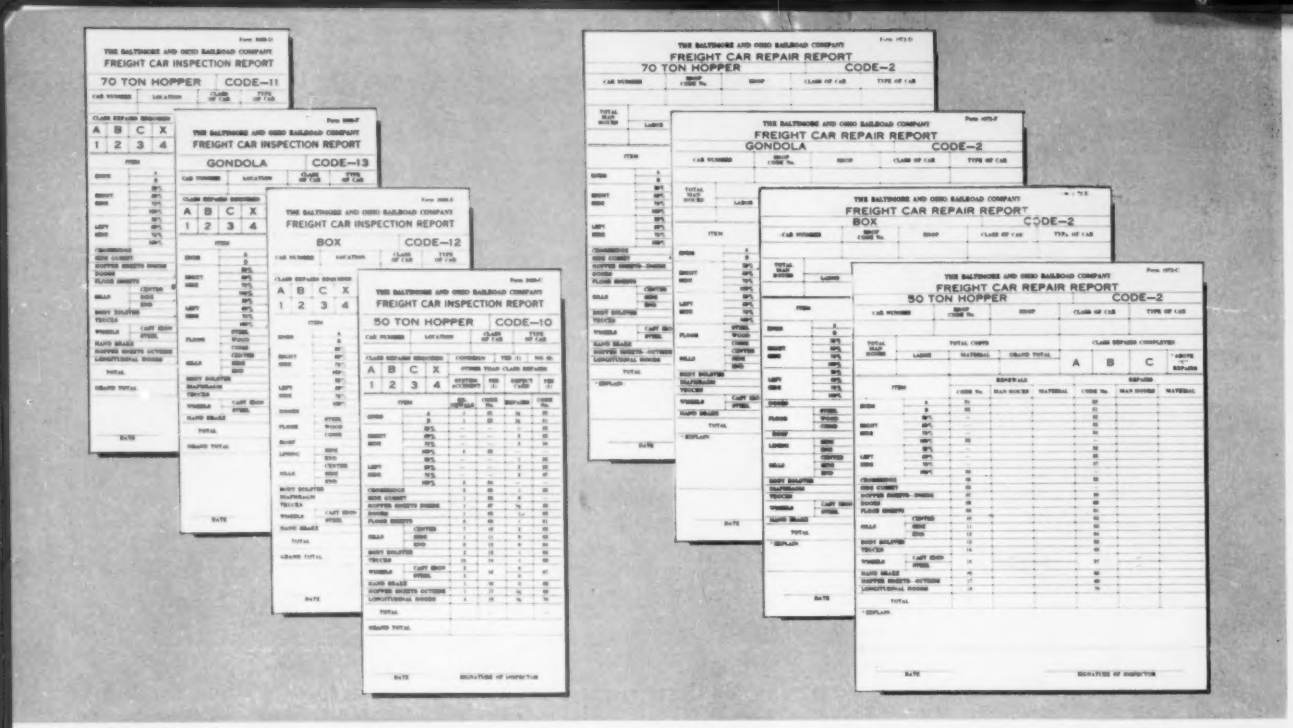
The plan is expected to provide the railroad with an adequate car supply to recapture business. It should also reduce the heavy per diem costs involved in using foreign line cars in place of unserviceable B&O-owned equipment. It is also expected to produce savings which mass car repair, on a regularly scheduled basis, can make possible.

Utilization of the latest electronic data-processing techniques gives the B&O a complete and current record of its bad-order cars, indicating their location, estimated repair cost and materials required for these repairs. Necessary materials for each car flow to the proper shop locations on a coordinated basis, timed to coincide with the car's arrival.

Completion of repairs on car is followed by report of all labor and materials involved.

"What we want is the maximum number of serviceable cars at minimum cost," a B&O spokesman explained as the program got underway in October. Studies have indicated that savings realized from the new cost controls and mechanical methods should minimize car repair expense. The computer is analyzing data compiled by car inspectors and cost engineers, insuring that the road gets a maximum return on every repair dollar spent.

Depressed traffic levels of recent years have curtailed B&O freight-car maintenance. Earlier this year President Langdon decided that the bad-order ratio could not be permitted to



Freight-car inspection reports (left) are completed by inspectors while going over the cars. Freight-car repair reports (right) are made at shop; computer compares actual results with the estimates based on inspectors' reports. All data goes on magnetic tape for computer.

Data from inspector's reports is transferred to punch cards; later it is put on the tape.

Materials and man-hours are estimated in advance for all cars coming in for repairs.

grow any larger. The program has been worked out not only to bring the freight-car fleet back into good condition, but to keep it there.

Computer records of unserviceable cars are kept current by adding cars when reported by inspectors. Every car is scheduled for repair on the basis of whether its estimated future service life justifies the cost. Three additional service-free years will be the minimum acceptable for most repairs. In initial stages of the program, two streams of cars will be flowing to B&O shops—those having just become unserviceable and others selected from the accumulation of bad orders now stored all over the B&O system.

Currently, there are about 21,000 of the road's 87,000 cars rated as unsuitable for service. Detailed information on nearly all these was gathered during July and early August when a "small army" of B&O car inspectors combed the system, giving each car a complete inspection. More than 100 car inspectors using specially prepared forms indicated whether each car inspected should be dismantled or repaired, and the types of repairs needed.

On the basis of this experience, specially designed report forms have become a permanent part of car inspector's equipment. There are four types of these inspection forms covering the four principal types of cars owned: 50-ton hopper, 70-ton hopper, box car, and gondola.

The reports when filled out, contain the following information:

- Car number.
- Location.
- Class and type of car.
- Was car damaged in system accident?
- Was car damaged in off-line accident?
- Does inspector recommend condemnation of car?
- Specific repairs required.
- Specific renewals required.
- Index number summarizing renewal and repair items required.
- Class of repair based on index number.

The reports are designed to determine immediately the class of repairs required and to facilitate analysis of car repair requirements by mechanized data processing.

Opposite each defect item listed there is a figure in the renewal and repair columns. When a defect is recorded, the figure opposite the item in either the renewal or the repair column is circled, depending on which is required. When all items to be renewed or repaired have been circled, the circled figures in each column are added. Finally, the two column totals are added together, producing a grand total.

(Continued on page 28)

A pioneering contribution from Electro-Motive for America's Railroads

GENERAL MOTORS ANNOUNCES . . .

GP 30

The BROAD-
GP

. . . Anothe
Drama
in Mainte
Reduct

D-RANGE
P-30

her
natic Step
tenance
ction

Advancing the trend established by earlier General Purpose locomotive models, the GP-30 takes another long step in reducing scheduled maintenance. Dramatic maintenance reduction combined with greater operating flexibility—high speed freight runs today, heavy drag service tomorrow—provides a locomotive that will do more work at less cost than ever before. The GP-30, mixed with other General Purpose and freight-type units of a lesser horsepower, meets basic requirements of a "pool" locomotive.

The GP-30 is a balanced design motive power unit. Its reliability and economies of operation and maintenance are measured in terms of greater capacity—fewer units required to meet today's freight schedules . . . sharply reduced maintenance requirements enhancing still further the General Motors Locomotive's long established record of higher availability . . . and increased operating efficiency resulting in further improvement in specific fuel consumption.

The Revolutionary GP-30 is more than a locomotive with increased capacity. Motor characteristics, wheel slip control, weight distribution, and factors creating good adhesion have been carefully balanced to create a truly flexible and versatile locomotive. And . . . to protect the railroad's investment in older locomotives, the Revolutionary GP-30 offers even greater economy through the General Motors Locomotive Replacement Plan.

For complete information about the Revolutionary GP-30, write for descriptive brochure and contact your Electro-Motive Representative.

GENERAL MOTORS LOCOMOTIVES

ELECTRO-MOTIVE DIVISION
GENERAL MOTORS
LA GRANGE, ILLINOIS • *HOME OF THE DIESEL LOCOMOTIVE*
In Canada: General Motors Diesel Limited, London, Ontario

The Revolutionary GENERAL MOTORS GP-30

A new broad-range, unit-reducing mainline locomotive . . . twenty-two hundred and fifty working horsepower . . . a major contribution from Electro-Motive research and product development . . . creating the profit making advantages of lower maintenance, higher reliability, broad-range performance . . . moving more gross ton miles per freight train hour at lower operating cost than any Diesel-electric locomotive ever put on the rails . . . anytime, anywhere.

This is the Revolutionary GP-30 . . . a new pace setter for America's railroads.

Computer Keeps B&O Car Repair Data

(Continued from page 22)

The class of repairs (A, B, C or X) required for each car will be determined by the figure in the Grand Total space—for instance, a total of less than 5 will rate the car in the A category; a total over 5 puts the car in the B classification, and still higher totals classify it either in C or X.

When the class of repairs has been determined, the appropriate letter under Class of Repairs on the inspection report is circled. A Shopped Car Card is then applied to both sides of the car, folding so as to display only the letter representing the class of repairs to be made. Original of inspection report, which is made in triplicate, is sent immediately to the Mechanical Department in Baltimore. The first copy is kept at the reporting station; the second is placed in the defect card holder on the car.

As the results of last summer's system-wide inspection came in to the mechanical department, cost engineers analyzed them, estimating wage and material costs involved in repairing the cars. They also estimated the number of serviceable years that might be expected from each repaired car, based on its type, age, and condition.

Because of the vast amount of work in putting this information in usable form for study and analysis, it was decided to turn the job over to the railroad's Datamatic computer. Data was put on punch cards for conversion to magnetic tape records used in computer processing.

From the mechanized data obtained in this process, three significant reports were produced: one showing estimated costs and man-hours involved to repair each of the thousands of cars inspected—by individual car number, by class and type of car, and broken down into various ranges of repair cost in ascending order of expense. A second report provided a complete list of repair and renewal items needed for each car so that material requirements could be determined. A third showed the location of every unserviceable car on the system. Each of these statements is summarized in various ways on the computer to facilitate analysis.

Analysis of the three basic reports produced by the computer showed that by grouping cars for repair, according to certain repair cost categories, B&O's needs for the immediate future could be met and a feasible repair program to produce required cars of various types projected.

Hoppers are repaired in the company's shops at DuBois, Pa., and Keyser, W. Va.; gondolas at Glenwood, Pa.; box cars at Washington, Ind., and Brunswick, Md. Other shops may be utilized as the program progresses.

Obviously, such a plan has called for a vast amount of coordination between departments in order to establish production schedules, arrange for material deliveries, and provide for movement of cars to shops so that all phases of the operation will fit together as a workable whole. The program is being refined and improved as work progresses. Immediately responsible for the plan is W. J. Dixon, industrial engineer. Reporting to C. E. Bertrand, vice president-operation and maintenance, he works closely with F. B. Rykoskey, chief mechanical officer, and W. A. Mullen, superintendent car department.

Shop Procedures

In B&O shops there is now no special emphasis on repairing a single class of car at one time. This means, for instance, that there may be several different types of box cars on a repair line simultaneously. They will, however, all require the class of repairs called for by the production schedule, even though this may not involve the renewal or repair of the same components on every car.

In conjunction with this program, the Mechanical Department is introducing design improvements in many cars. Box-car body bolsters are being strengthened and hopper cars are being fitted with heavier top side angles. Gondolas are being equipped with improved ends.

The material requirements for each of the different repair operations have been worked out very carefully. For example, suppose a car, when inspected, is found to require repair to both ends and to floors, sheets, center sill and trucks, as well as renewal of crossridges, side gussets, hopper sheets, and doors. The summarization of this type of information by the Datamatic computer for each class of car permits computation of detailed material requirements in terms of steel plates, angles, and rivets for the cars.

The material and man-hour figures are based on experience with past repair programs and will be adjusted, if necessary, as the new program continues. In addition to the three preliminary reports produced weekly by the computer, a fourth tabulation, also weekly, has been added, based on reports produced by cost study engineers at each of the repair shops. As each car comes off the repair line, an individual Freight Car Repair Report is made showing the cost of materials actually used on the car and the total man-hours expended. This information, which is compiled from detailed work sheets designed for that purpose, is key punched and transferred to magnetic tape in the Data Processing Center. Here it is used to produce a record showing a comparison between the preliminary estimate of man-hours and materials and the actual figures for each car repaired. With this car repair analysis, it will be possible to check inspection quality, review material requirements to avoid waste, and to develop more accurate cost figures. This "feedback" is expected to be an important benefit resulting from the use of the computer.

Class X cars, or cars recommended for condemnation by inspectors are not being repaired during the first phase of the program. Serviceable cars are available at much lower cost presently by processing the A, B, and C cars. For this reason, one of the important tabulations prepared by the computer is that showing cars ranked in order of estimated total cost of repairs. As experience is gained with the new system, decisions will be made later as to which, if any, Class X cars will be repaired. Cars will not be automatically scrapped on the basis of the car inspector's classification; they will be reinspected by supervisors before a final decision is made on their disposition.

The computer program now involves only box cars, gondolas, and 50- and 70-ton hoppers. These cars make up only a few of the 21,000 bad-order cars which the B&O has. Summaries of the bad-order situation indicated the following unserviceable cars: 5,500 box cars, 3,300 gondolas, and 12,500 hoppers. A large proportion of these are in the X classification and will either be retired or repaired later.

Containers used by Alaska vary. Some are fitted for heating and refrigeration; others only for heating, and some only for cooling.

Power Car Used for Alaska Piggyback

Containers loaded with perishables are moved over the Alaska Railroad on special flat cars equipped with electric trainlines from which the refrigerating and heating equipment on the containers can be powered enroute. Electric current generated on a power car is fed to the container cars through a 200-amp trainline.

Containerized perishables are handled by ship from Seattle and San Francisco to the southern terminal of the Alaska at Seward. Containers are then transferred to railroad cars for movement to various points along the 470-mile main line extending through Anchorage to Fairbanks. At destinations the railroad delivers containers to consignees using its own tractor-trailer equipment.

Cuts of container flat cars are accompanied by one of the Alaska's power cars when in trains. While the power car operates unattended, it does have warning lights mounted about 18 in. above the car's roof where they are visible to train crews. If an engine or generator should fail, a relay closes to complete a circuit from the 12-volt battery to the warning lights. This indication makes it possible for the crews to take action to prevent spoilage of the perishable ladings.

Cargo containers have a capacity of 1,100 cu ft and 50,000 lb. They are fitted with heating and refrigeration units like those used by other container operators. Each of the 53 ft 6 in. flat cars has deck-mounted chock blocks which hold two of the 24-ft containers.

A typical power car, a rebuilt World War II kitchen car, is equipped with a pair of diesel-driven alternators. The car shown carries one 150 kw Caterpillar Model D-337 and one 75 kw Caterpillar Model D-13000. The 650 gal fuel tank is installed inside the car, between the two generator sets.

Current generated is three phase, 60-cycle, 120 volt. Flat cars have 2 in. conduit attached to the underframes and extending from end to end, carrying the three 2/0 power cables and a No. 4 grounding conductor. There is a 200 amp receptacle at each end of each car adjacent to the angle cock. Each car is also equipped with three receptacles, one at the center and the others at diagonal corners of the car into which jumpers from the container refrigeration and heating units can be plugged. These cables have 20-amp ratings.

Because there is no car interchange, trainlining of Alaska piggyback cars presents no operating problems.

Diesel alternators are mounted over the trucks at both ends of the power cars.

Power cars are fitted with trainline receptacles at both ends through which current is fed to container flat cars. Cars are designed to be operated without attention en route.

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Records of one railroad show that Timken bearings have rolled heavily-loaded cars over 600,000,000 miles with only three overheated bearings. Compare this to any other bearing's performance.

LUBRICANT

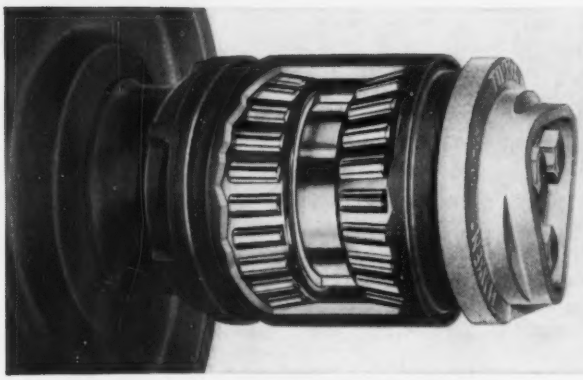
On one railroad's high-speed, high-mileage cars, Timken bearings rolled 288,000 miles without addition of lubricant—kept right on rolling. Compare this to any other bearing lubrication records.

GROWTH

In 1960, nearly two out of three new freight cars were roller bearing-equipped. And of these, more went on Timken Heavy-Duty "AP" bearings than on any other make.

Today 111 railroads and private car owners have over 83,000 freight cars on Timken tapered roller bearings. The "Big Switch" to "Roller Freight" is under way. And Timken bearings lead the way.

Timken Heavy-Duty "AP" bearings are tapered to roll practically friction-free. Railroads are ordering more of them on freight cars because they're precision manufactured to deliver unmatched cost-cutting performance, improve service. Join the "Big Switch" to "Roller Freight". The Timken Roller Bearing Company, Canton 6, Ohio.



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Don't Go Looking for Trouble

By Ken Wright

Even though many more mechanical refrigerator cars were in service, the number of failures seemed to be going down steadily. The men in Big Jim's shop frequently discussed this. Some said it was because of better maintenance; others believe that better engineering and improved construction were responsible. One fellow suggested that, perhaps, because there were so many more cars, there was a great deal less tinkering. Probably it was a combination of all these factors which was producing the successful operation. Not all failures had been eliminated and sometimes the new developments, themselves, were responsible for confusion and delays.

All this made Pete unhappy; he was forced to spend more and more time on routine work. In addition, he had done such a good job of training his fellow workmen that now they had very few occassions to call on him for assistance. One afternoon while several cars were being prepared for service, Chuck came over to Pete and said: "I've got a strange one over there; the compressor on that car won't stop unless the thermostat is turned up. It puzzles me because everything seems to be all right."

Pete turned. "How many times have I told you that the proper nomenclature is temperature control, not thermostat," he asked. "You should use the proper terms to prevent misunderstanding. If your report concerning a defective thermostat is not clear, someone may think it is the thermostat in the engine cooling system, not the temperature control for the entire car. Well, let's go see what the trouble is."

As they approached the car, Pete said: "What's the setting on the temperature control?"

"The car is going to be loaded with chewing gum and they want a 35-deg temperature. You can see both from the test thermometer and the car's own thermometer that the temperature is 35 deg. However, the compressor is still running, and I'm afraid the temperature will continue to drop. Why doesn't the compressor stop when the temperature control setting is reached?"

A glance at the car's reporting marks told Pete that it was part of a rather extensive fleet. He didn't, however, recognize the car number and assumed that it was be a reasonably new model. Subsequent events proved this to be the case.

Pete climbed into the machinery compartment, gave the engine a quick glance, and turned to the compressor. The car had a single compressor. This was unusual, because most of the cars previously operated by this car line had dual-compressor refrigeration systems.

Pete felt the compressor cylinder heads. "Did you feel these heads, Chuck?"

"Sure; two of them are hot and two are cold. What does that mean?"

Pete looked a bit disturbed, and then said: "It means that two of the cylinders are loaded and the other two are unloaded. This compressor is only working at half capacity. Has it operated this way ever since you started the car, or did the control system unload the two cylinders?"

"I'm sorry, Pete, I don't know," Chuck replied. "When I started the engine, I did notice that the compressor started but didn't check to see if all of the cylinders were loaded. As a matter of fact, I forgot that you could make this sort of check. I remember now that cylinders which are loading will be hot because of the compression which is taking place in them. I do know that the car started to cool down immediately and didn't think that anything was wrong until its temperature got near the setting. When the compressor failed to stop, that's when I came to get you."

In the meantime, Pete had opened the electrical cabinet and was looking at the wiring diagram. "Look at the governor on the engine and see if there's anything unusual about it."

"Not a thing," replied Chuck. "What's that got to do with our problem?"

"Let's go outside where it's easier to talk," replied Pete.

As they climbed down from the car's machinery compartment, two of their fellow workmen were passing by. When they saw Pete and Chuck, they thought something unusual was probably taking place. Not wanting to miss a trouble-shooting session, they stopped to listen. Quickly Chuck explained his problem and then turned to Pete for an explanation.

"First we must realize that this is a fairly new car," Pete began. "Its control system incorporates later developments than those with which we are familiar. That wiring diagram in the control cabinet was a little confusing when I first looked at it. It develops that the owner uses the same wiring diagram to cover two different arrangements.

"A refrigeration system moves heat. That is old stuff to us, of course, because we have gone into it many times before. When we have a large quantity of heat to remove from a car, there is a great deal of work to be done, and a lot of power will be required to do it. If it's a hot day, the removal of the heat will mean a still greater work load. As the temperature of the car's interior is lowered, however, there is less work to be done.

"Designers finally asked themselves why an engine should run at top speed if full horsepower is not required. Same thing applies to electric motors. Why should they operate at full speed unless maximum output is required? By reducing the speed of these components, it was thought it might be possible to reduce wear on bearings and other moving parts. On some cars they have now gone to two-speed operation. During the initial pull-down or cooling of a warm car, the engine operates at high speed and produces 60-cycle alternating current. When the temperature approaches the car's temperature-control setting, engine speed is reduced so that 40-cycle a-c is produced. This means that the motors then operate at two-thirds of their maximum speed.

"Wait a minute Pete," asked one of the fellows who had stopped to listen. "Wouldn't operation on the lower frequency cause these motors to overheat?"

"Normally that would be true," Pete answered. "However, the alternators are designed so that their voltage drops in direct proportion to the lower frequency. This means that there is no motor overheating.

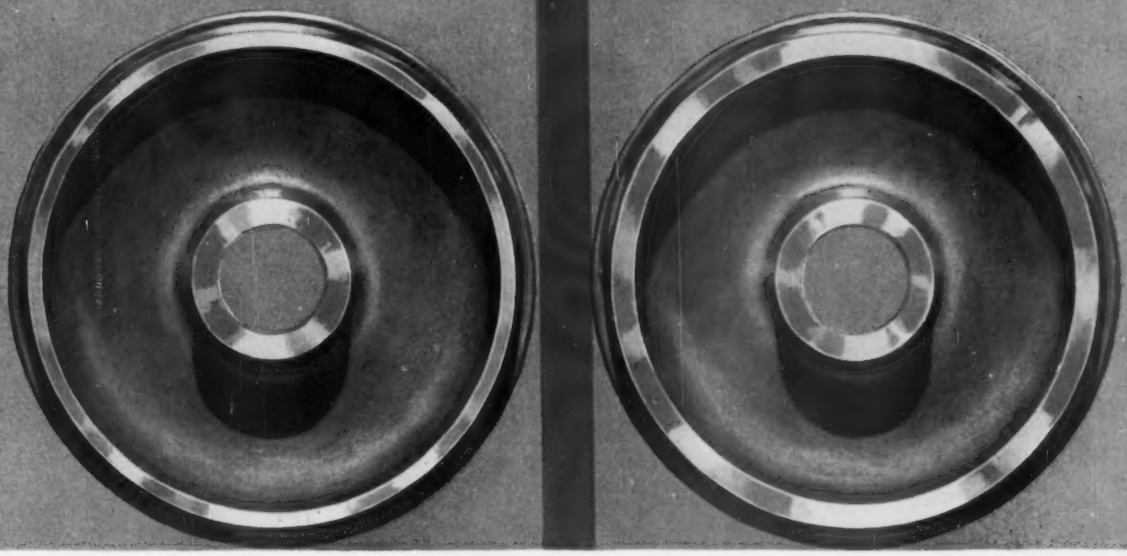
"Now, where was I? Oh yes; at the

(Continued on page 36)

This is the eighteenth article in this series discussing the operation, maintenance and trouble shooting of mechanical refrigerator cars.

one of these is a ONE-WEAR WHEEL
the other is a TWO-WEAR WHEEL

THEY'RE BOTH CAST BY GRIFFIN



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- Cast within 20-thousands of an inch tolerances
- Perfectly round as cast . . . no machining required
- Only two tape sizes. (Actually, most Griffin® Wheels are within two half-tape sizes!)
- All present AAR gauges can be used
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GRIFFIN EQS® ONE-WEAR WHEEL

- Minimum 1¼-inch back rim. Can be turned on both flange and tread to restore full contour.

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- Minimum two-inch back rim, with one-wear tread and flange design.
- A *multiple-wear* wheel that can be "turned" several times. (You're assured of *at least* two full turns, regardless of flange wear.)

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For dependable braking of your switchers specify A-12 METAL brake shoes by American Brake Shoe. They are engineered to take it and give you more braking for your brake shoe dollar.

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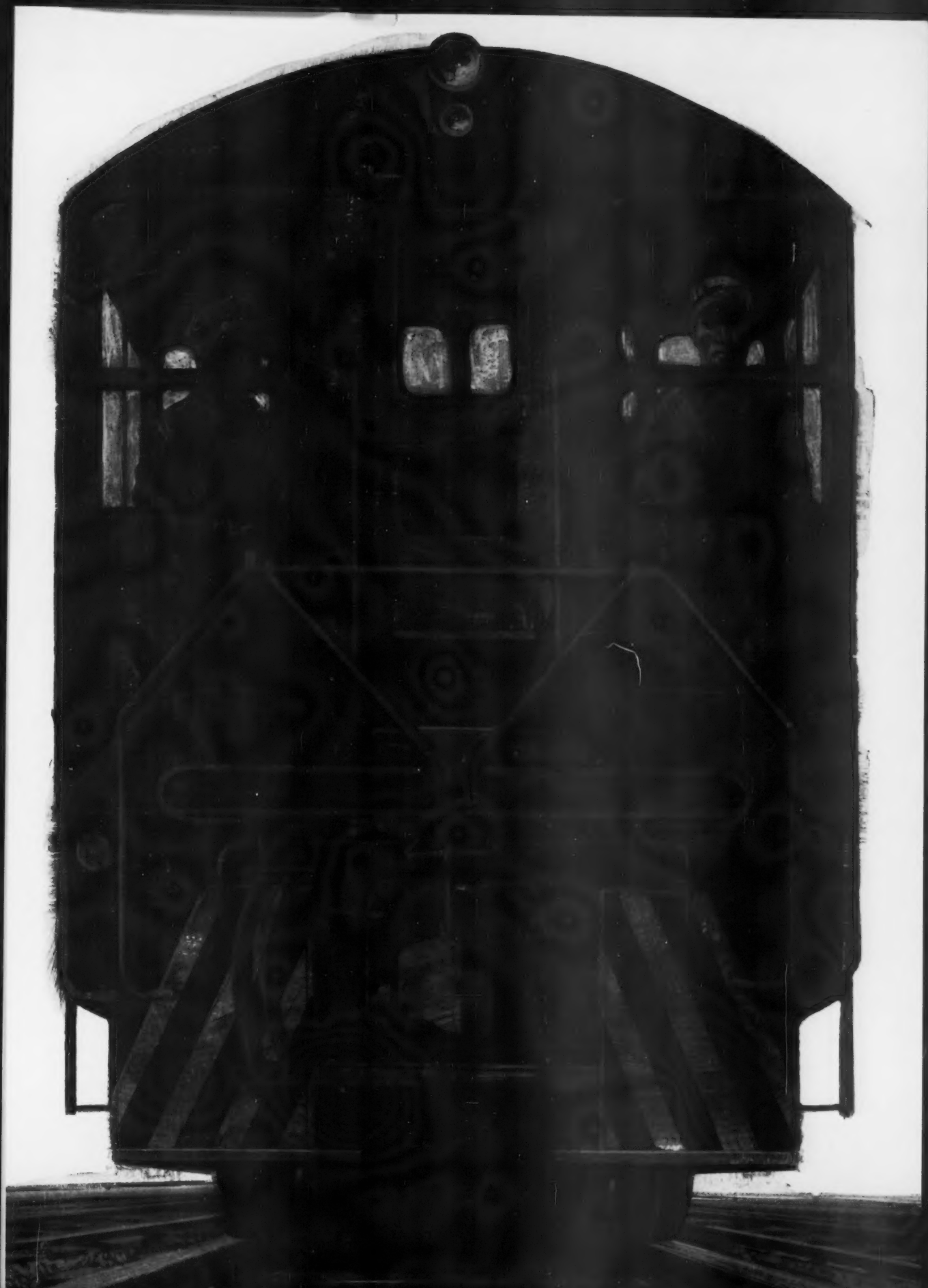

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(Continued from page 32)

same time the engine speed is reduced, the compressor is partly unloaded. This, therefore, reduces power requirements. Under average conditions, this operation will continue and hold the car temperature very uniform. If the temperature were to continue to drop so that it finally went below the temperature setting, the compressor would stop. However, the engine would still continue to run at reduced speed.

"When I checked the wiring diagram, I determined that this car does not have the two-speed engine arrangement. However, it does incorporate the partial unloading of the compressors. In short, the symptoms that were bothering you, Chuck, were really evidences of normal operation."

"That clears up something else for me too," Chuck replied.

"What was that?"

"I could only wonder, before I came over to get you, why the car's temperature was so steady. Any changes were so slight that I could not detect them."

"Like a lot of other fellows, Chuck, you have a tendency to imagine that you are incurring trouble when, in reality, there is nothing wrong."

The fourth fellow who, until now, had said nothing, spoke up. "Pete, don't all of the extra controls needed to produce this two-speed operation and compressor unloading really create additional places where trouble can occur? It seems to me that putting in more controls is really asking for trouble. What are the advantages?"

"I'm not sure of the actual figures," replied Pete, "but I do remember that a 25% fuel saving could be expected with the two-speed operation. In addition, there should be reductions in wear and tear on the engine and other components. These would be hard to evaluate accurately. At any rate, there should be some increase in their service life."

Suddenly Pete stopped. "Here we have been talking again and soon Big Jim will want to know why that job of mine isn't done."

"Wait a minute, Pete," Chuck said. "Should I check to see that all of the compressor cylinders will load?"

"To satisfy yourself, you probably should," Pete said as he turned to go. "You did not think that it took too long to bring the car's temperature down, so I would be willing to bet that you did have full capacity with all four cylinders operating during that pull-down period. All you need to do now is to turn the temperature control to a lower setting and all of the cylinder heads should begin to heat as the compressor again begins to operate at full capacity."

As he turned away, they heard Pete muttering, "Spent all that time and there wasn't a darn thing wrong."

General Motors GP-30

(Continued from page 17)

sures cooling water flow under high temperature conditions which can develop during tunnel operation, or when radiators may be clogged or shutters partially closed. A pressure relief cap permits cooling system pressure to build up to approximately 3 psi as the water is heated to operating temperature. This raises the boiling point of the water 8 to 12 deg F at the water pump inlet, assuring positive water flow at the higher operating temperatures. Evaporation losses are reduced so that refilling and addition of water treatment is practically eliminated.

Like most recently built road switchers, the new GP30 has the low-profile, short hood ahead of the cab. In the cab is a new unitized control stand, which has been specially developed for this locomotive. Combining the air brake and locomotive controls in one panel, it is intended to simplify locomotive operation for enginemen.

"An important economic feature of the new locomotive is the fact that it can be purchased through Electro-Motive's Locomotive Replacement Plan, with savings to the railroad customers," Mr. Terrell told railroaders gathered at Warren. He said that the plan, under which railroads turn in 12- to 16-year old 1,500-hp GM units so that certain long-life parts may be remanufactured and incorporated in a replacement locomotive can offer excellent return on investment. "The reason that certain long-life pieces can be reused," he explained, "is due to the long-established engineering policy at Electro-Motive which requires that all improvements in components must be applicable to earlier models. Thus the customer's investment in older motive power has been protected to a degree far beyond that which could logically have been expected at the time of purchase."

Lets one man do the work of three!

The built-in hypocycloid gear is the power secret! Free to follow the eccentric crankshaft, but not free to rotate itself, it produces a 6:1 reduction ratio.

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NEW! Wine Power Geared* Discharge Gate

EVEN UNDER A 70-TON LOAD one man can open this new gate. Accurately machined mating surfaces provide bind-free operation and a tighter seal. No more sledging or car damage in attempts to open "frozen" hopper doors. Electric steel castings eliminate distortion.

PRECISION-MESHED GEARS without costly machining! Amazingly accurate shell molding process helps keep unit competitively priced despite *Power-Gear* features. Rack-and-pinion principle assures parallel operation without side binding. All bearing surfaces are lubricated with Moly Disulfide.

COMPLETELY PREASSEMBLED for easy installation, ready for welding. No further fitting, no extra parts required during assembly of car. 13x24" opening fits most standard chutes. Interchangeable with most present gates; equipped with standard boot groove. Conforms to all recognized unloading devices. Now in service on six major railroads and a car leasing company. •

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Spectrometer at Cleveland Research Center shows that wear in locomotives using Talona RS Oil 40 is negligible. Lab technician in foreground prepares samples.

Amazing performance record of Talona RS Oil 40 was set up in EMD diesel locomotives. Oil was used on heavy-duty freight operations.

LUBRICATION:

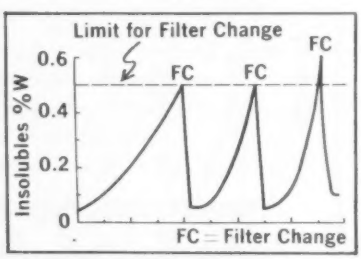
"After 316,000 miles of heavy-duty use, Shell's Talona RS Oil 40 still does not need draining," reports the New York Central

The New York Central Railroad system has just completed its latest monthly check on Talona RS Oil 40 – after the oil had been in use 316,000 miles.

The railroad's lubrication experts report that the oil is still in sound condition, and satisfactory for continued use.

Read how Talona® RS Oil 40 can help trim your operating costs.

LOCOMOTIVES that used to need an oil change every 50,000 miles now run 300,000 miles and more between drains. The reason: Shell Talona RS Oil 40.



Graph shows effective filtration of Talona RS Oil 40 in heavy-duty freight service, using a lower cost fuel. Good filterability helps keep engines clean.

New proof of this oil's outstanding performance has just been disclosed by one of the largest railroads in the United States.

Recently, when New York Central Railroad sent samples of Talona RS Oil 40 to the Cleveland Research Center for testing, the oil had been used on heavy-duty freight operations – for 316,000 miles.

Despite the high mileage, the railroad's lubrication experts could report these amazing results:

> *Insoluble contaminants are still being controlled by filters at safe levels. Spectographic analysis shows that wear is negligible. And there is no excessive thickening of the lubricant.*

The lubrication experts recommended that the oil should be kept in use. And the railroad has extended the drain period indefinitely.

Here are 3 key features of Shell's Talona RS Oil 40 that can help you trim your railroad operating costs:

1. Talona RS Oil 40 has excellent filterability.

2. Talona RS Oil 40 contains special Shell additives that resist oil oxidation, even in heavy-duty work.

3. Talona RS Oil 40 contains alkaline additives that neutralize acids.

Your Shell Railroad Service Engineer will give you the details. Or write: Shell Oil Company, 50 West 50th Street, New York 20, N. Y.

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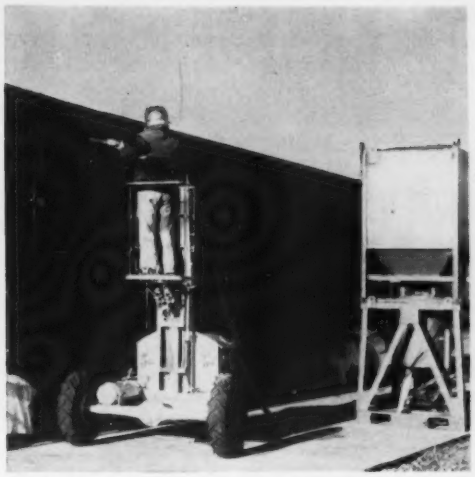
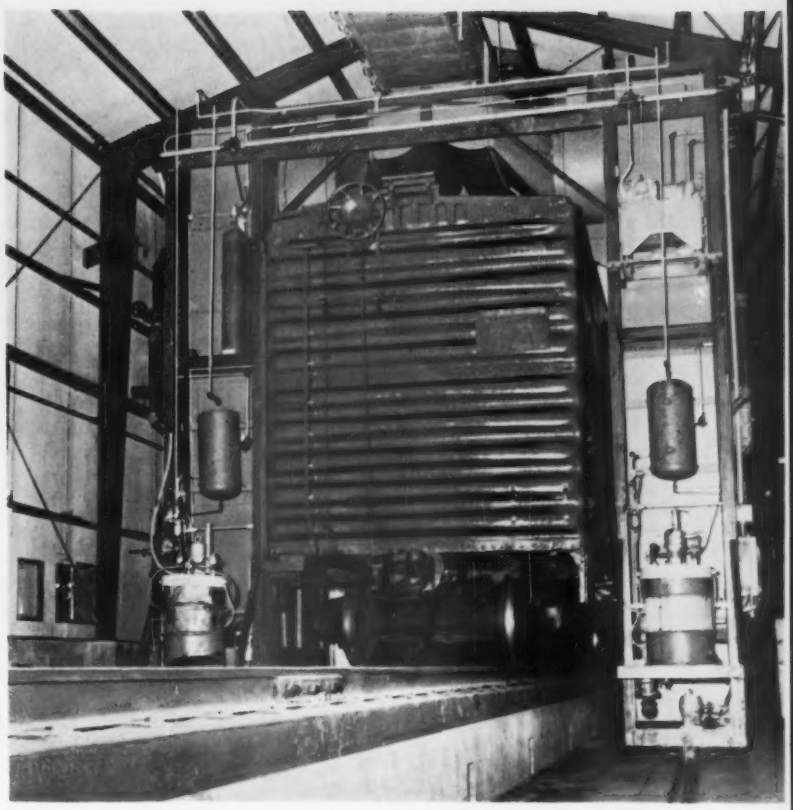


"Squirrel," developed for agricultural use, provides a self-operated, adjustable-height platform from which the sandblast operator can prepare cars for painting.



Traveling paint spray booth operates on a 324-ft runway which makes it possible to paint and stencil six cars from booth during a single shift. Track through the shop holds six cars. Large lettering on newly repainted cars will help to develop, according to a D&H officer, "a lively and fresh impression of the vitality of the Delaware & Hudson system."

D & H Has Programmed Car Painting

A painting program that will bring freight cars in to be repainted every sixth or seventh year has been undertaken by the Delaware & Hudson. During 1961 this calls for fresh paint for 1,500 of the road's 10,000 freight cars. To do this on an efficient production basis, D&H has installed a new paint facility at its Oneonta, N. Y., car shop. Completed and put in service in late 1960, the Oneonta facilities now handle six cars a day on a one-shift basis.

Fresh paint on D&H freight cars and locomotives is in keeping with a "new look" which the railroad has been striving to achieve. Appearance of the road's freight cars is important, according to J. P. Hiltz, Jr., vice-president, Operation and Maintenance, since it is the freight cars that the public sees most often, and from them at least a part of the public image of a railroad is formed. D&H, which had no special facilities for freight-car painting prior to completion of its new shop, strived to produce a facility which could operate smoothly and efficiently with a minimum work force.

Cars to be painted are placed on storage tracks adjacent to the building. Enough cars are provided to keep the paint shop production line supplied for whatever shifts are being worked. Cars of the same type are selected for one day's operation.

One man is assigned to prepare cars for painting. Using a Whiting Trackmobile, he moves cars from storage track to the sandblasting area on the inbound track.

Clemco sandblasting equipment and a Blackwelder Steel Squirrel are used. The "squirrel," developed for use in

Painting is to continue on a sustained and regular basis at new shop. Only cars of one type are painted at one time. Trackmobile is used for moving cars into and out of shop.

apple orchards, permits the operator in the cage to raise or lower himself to any desired height. The squirrel eliminates the need for platforms in the sandblasting area.

When the cars have been prepared, the Trackmobile is used to move them to the door of the shop. At the end of a day's operation, six cars will be waiting; six will be finished and ready to pull out the other end of the shop to be weighed and returned to service.

The Trackmobile moves the completed cars from the shop and then places the six sandblasted cars inside. Air in the shop is heated. Overnight, this removes all traces of moisture and warms all the metal surfaces so that the one-coat paint spray will adhere properly with uniform and complete coverage.

Inside the 340-ft shop a DeVilbiss traveling spray booth is operated on a 324-ft runway—ample for six 50-ft cars. At the finishing end of the shop a pit 20 ft long and 6 ft deep, equipped with floodlights, is provided for spray-coat, fast-drying paint is applied with Grayco airless spray equipment. Paint is not heated prior to application.
ing under portion of cars. The one-

Spraying Operation

Spraying is done by two painters—one on each side of the booth. One paints a side and the lower portion of the ends. The other does the opposite side and the upper ends. The booth is arranged so these painters can also do the underbody and trucks. The booth travels at 22 ft per min, requiring under 15 min to pass the six cars. D&H is experimenting with a 4-mil paint thickness, expecting it to last six to seven years. Experience may later lead to a change in this thickness.

By the time the booth has traveled the length of the line, paint on the first car is dry enough to permit stencilling. This is also done with the spray equipment.

The spray booth is equipped with two exhaust fans, each having a capacity of 8,400 cfm. These exhaust fans deliver the air to a stationary exhaust duct which runs under the roof for the length of the building. Three exhaust fans on the roof maintain suction in the stationary exhaust duct. Only one of these fans is in operation at any one time, as limit switches are used so that fans cut in or out, depending on the position of the spray booth as it travels. Each of these fans has a capacity of 19,600 cfm. The air make-up unit, located in an annex to the main paint-shop bay, has a capacity of 18,000 cfm.

In this same annex are the boiler-room, locker and shower rooms, office, stencil room, and paint storage. Near the finish end are vats for cleaning the stencils.

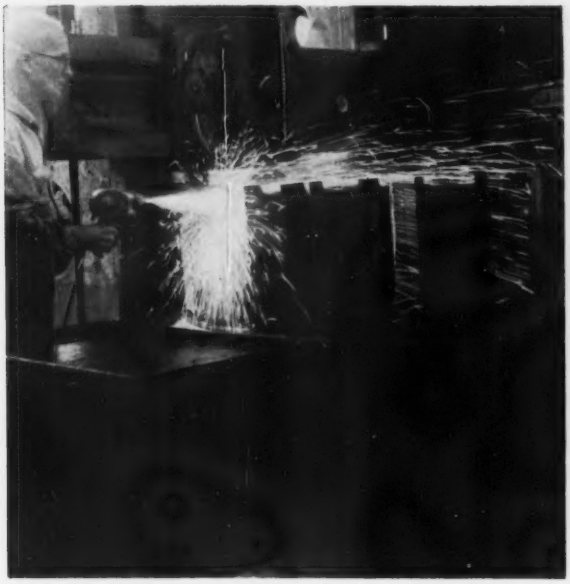
Scale for weighing the cars is on the outbound track. Here the stencilling can be completed before cars are moved to the transportation yard. Near the outbound end of the shop is a pit from which cars can be undercoated.

German-Built Diesel-Hydraulics Arrive in U. S.

Six 4,000-hp diesel-hydraulic road locomotives built by Krauss-Maffei of West Germany arrived in Houston, Tex., aboard the Norwegian freighter Christian Smith on October 28. Three units were ordered by the Southern Pacific and three by the Denver & Rio Grande Western (RL&C, September 1961, p. 23). All units initially went into the Houston shop of SP-subsidiary T&NO to be prepared for service. The D&RGW locomotives were then to work their way to Denver, hauling Burlington freights. A. N. Bisgard, assistant chief mechanical officer of D&RGW, estimates that the three locomotives "will do about the same job we are now doing with five 1,750-hp diesel electrics, but the new locomotives will do the job faster." SP anticipates that advantages of new units as compared with diesel electrics may include: high torque conversion ratio; high factor of adhesion; continuous low-speed, full-load operation; ability to exert full tractive effort at standstill; lower unsprung weight on axles; lighter and smaller parts; sealed components excluding dust and water.

Diesel Repair Time Savers

Pedestal Liner Reclamation



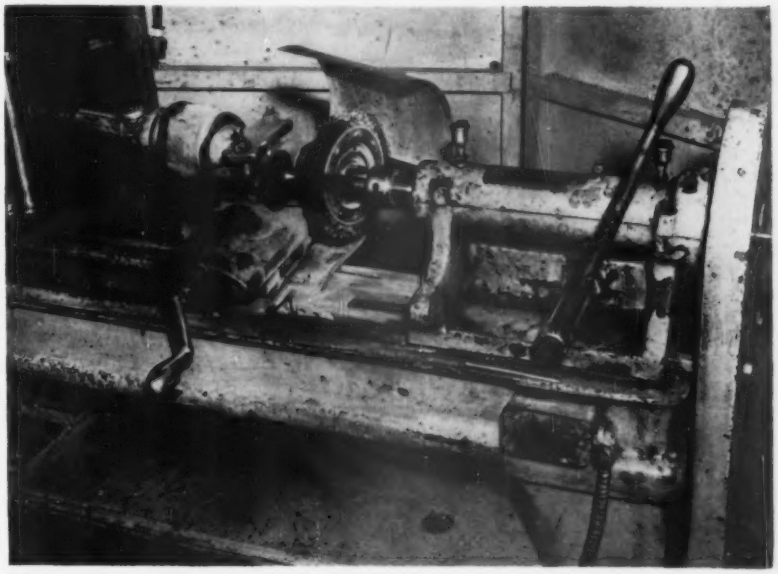
Illinois Central reclaims worn truck pedestal liners at its Paducah, Ky., shop. Liners are sandblasted and then shot blasted in a Pangborn blast cleaner. Areas to be built up are determined by straight edge, and unworn areas are coated to mask them. Liners are mounted on an old boring mill equipped with fixtures to hold 35 liners. Bed rotation is controlled by a foot-pedal. Liners are first sprayed with nickel-steel Spra-bond and finished with Metcoloy No. 2 which can be applied up to $\frac{1}{16}$ in. thick.

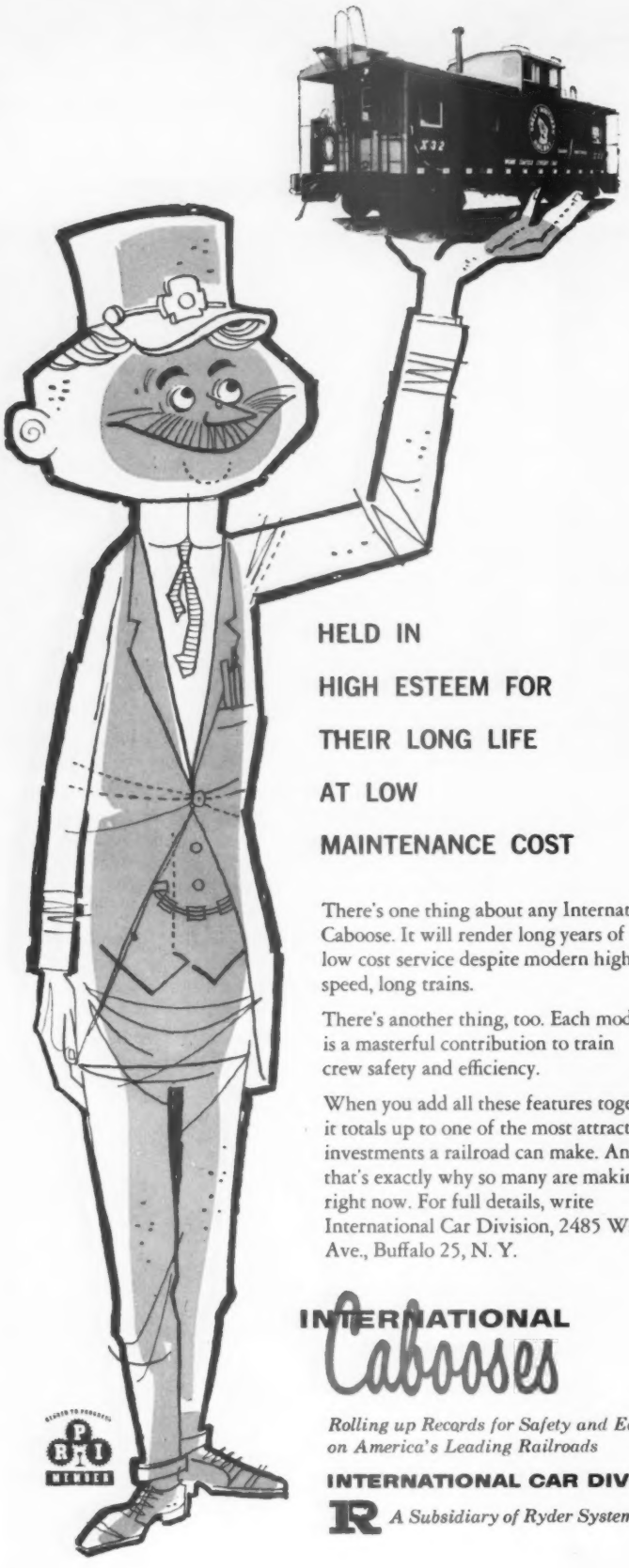
Oil Cooler Modification

Modification of the old style EMD oil cooler discharge baffle plate to conform with the present standard baffle plate is being done in the South Louisville shop of the Louisville & Nashville. By cutting a slot 6 in. deep and 27 in. wide out of the top edge, the plate conforms to that now furnished in the EMD modification kit. A reinforcement angle is applied the width of the slot along the bottom edge. The plate is used in oil coolers for GP-9 road switcher and F-9 road freight locomotives.

Illinois Central Valve Cleaning Machine

Old centering machines equipped with air-motor driven wire buffers are used at points along the Illinois Central to clean diesel engine valves. Each valve is mounted in a chuck and the buffer is moved in to contact surfaces with build-up. Production has been increased to about 275 valves per day for one operator. The valves were formerly placed in a cleaning solution and cleaned by hand on an emery stand. Heavy gloves had to be worn for protection, and the output was about 70 valves per day.





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Report

(Continued from page 10)

compiled. The June 1961 figure of 292,-338 miles per car set off is over 110,000 miles better than the 1955 figure of 180,-666, the best previous June on record. Monthly figures are given below.

	Cars set off between terminals with hot boxes		Miles per car set off
June 1956	21,902		135,774
June 1957	24,562		115,749
June 1958	18,013		145,216
June 1959	20,169		138,002
	Pads	Waste	
June 1960	1,795	14,934	159,354
1961			
Jan.	2,298	3,883	378,508
Feb.	1,994	4,679	332,701
March	2,252	4,132	398,426
April	2,098	3,702	448,133
May	2,191	5,016	363,152
June	2,193	6,608	293,338

Personal Mention

W. A. Mullen, B&O

W. F. Dadd, B&O

A. W. Gibson, B&O

J. G. Moore, Southern

Baltimore & Ohio.—*Baltimore, Md.:* WILLIAM A. MULLEN, appointed superintendent car department. WILLIAM F. DADD appointed superintendent motive power, Eastern Region, succeeding GUY F. WILES, retired. Mr. Dadd formerly superintendent motive power at Cincinnati, Ohio. ARCHIBALD W. MCELVANY, supervisor mechanical methods, appointed superintendent mechanical methods, succeeding Mr. Mullen. *Cincinnati, Ohio:* ALBERT W. GIBSON appointed superintendent motive power, Western Region. Mr. Gibson formerly assistant superintendent car department at Baltimore.

Chesapeake & Ohio.—*Grand Rapids, Mich.:* R. C. BLAKESLEE, car foreman, appointed car shop superintendent, succeeding C. A. THOMAS, now district car forman.

Elgin, Joliet & Eastern.—*Gary, Ind.:* RAY E. GREEN appointed assistant road foreman of engines-assistant trainmaster, Gary division. *Joliet, Ill.:* THOMAS E. CONDON appointed road foreman of engines and system air-brake supervisor. ROBERT M. CHAMBERLIN appointed road foreman of engines and assistant trainmaster, Joliet division.

Rutland.—*Rutland, Vt.:* JOHN W. LOVETT, manager of personnel, appointed general manager, with jurisdiction over purchases and stores, transportation, maintenance of way, maintenance of equipment, and personnel departments.

Santa Fe.—*Los Angeles, Calif.:* ROY V. KETRING, general car foreman, retired.

Southern.—*Washington, D.C.:* J. G. MOORE appointed assistant-vice president - mechanical, succeeding R. E. FRANKLIN, resigned. Mr. Moore, formerly superintendent of maintenance equipment at Charlotte, N.C., joined the Southern in 1941. After serving in various supervisory assignments at Meridian, Miss., he was transferred, in 1953, to the Charlotte Roadway Shop where he subsequently served as assistant to shop superintendent, shop superintendent, and superintendent of maintenance equipment.

Southern Pacific.—*San Francisco, Cal.:* S. M. HOUSTON, general superintendent mechanical department, retired. F. E. RUSSELL, assistant general superintendent mechanical department-engineering, appointed chief mechanical officer-system. D. K. MCNEAR appointed assistant chief mechanical officer-engineering. N. L. MCCRACKEN, assistant general superintendent mechanical department-engineering, appointed assistant chief mechanical officer-maintenance.

Tennessee Central.—*Nashville, Tenn.:* F. BROOKS BEARDON, acting chief mechanical officer, appointed chief mechanical officer.

OBITUARY

A. F. Leppla, retired mechanical engineer, Rock Island, died September 2 in Torrance, Calif.

Supply Trade Notes

J. B. FORD DIVISION, WYANDOTTE CHEMICALS CORP.—*John J. Wilson*, field service manager, Philadelphia district, appointed district sales manager, New York territory. *James S. Nubbard*, New York manager, transferred to manage Cincinatti, Ohio, operations. *E. S. Schmeling*, Cincinnati, appointed district sales manager, Chicago.

■

NATIONAL CASTINGS CO. — *Kenneth L. Selby* elected vice-president of National Castings and group executive of Transportation Products and Capital Foundry Divisions. *Mellor W. Stevenson*, vice-president sales, Transportation Products Division, succeeds Mr. Selby as vice-president and general manager of the Transportation Products Division.

■

COLORADO FUEL & IRON CORP.—*R. L. Hanes* elected vice-president in charge of sales, Western Division.

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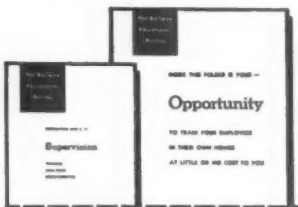

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Robert A. Sherman, Budd

Samuel W. Madeira, Budd

BUDD CO.—*Robert A. Sherman,* regional sales manager, Railway Division, New York, appointed vice president-sales, Northeastern region, New York. *Samuel W. Madeira,* district sales manager, Southeastern region, Railway Division, Philadelphia, appointed vice-president-sales, Southeastern region, succeeding *Percy R. Keller,* retired.

■

GRIFFIN WHEEL CO.—New $6,000,000 steel-wheel plant, covering 135,000 sq ft and having a capacity of 148,000 wheels a year, opened at Bensenville, Ill., northwest of Chicago. This is fourth wheel plant to be constructed by Griffin in less than five years. Executive sales offices being opened in International Building, 630 Fifth avenue, New York.

■

AMERICAN CAR & FOUNDRY DIV., ACF INDUSTRIES, INC.—*John M. Guidera,* Philadelphia district sales manager, appointed New York district sales manager, succeeding *Thomas A. Ballou* now manager of railway equipment sales (RL&C, Sept., p 47).

■

AMERICAN STEEL FOUNDRIES, TRANSPORTATION EQUIPMENT DIV.— *Walter Moryto,* manager service engineering section, appointed also mechanical assistant to vice-president of division.

■

SYMINGTON DIV., SYMINGTON-WAYNE CORP.—*Ernest J. Warnock* appointed chief mechanical engineer, succeeding *C. Irving Lusink,* retired.

■

ELECTRIC STORAGE BATTERY CO.—*W. W. Gould,* Chicago district manager for Nickel-Alkaline division, appointed nickel-iron battery market manager, Exide Industrial Marketing division.

■

RAILWAY MAINTENANCE CORP.—*Holden Co., Ltd.,* Montreal, appointed exclusive Canadian representative.

■

ENTERPRISE RAILWAY EQUIPMENT CO.—*John Dewar* named sales manager.

■

UNION SPRING & MANUFACTURING CO.—*Raymond M. Beacha* appointed manager of spring sales.

■

OAKITE PRODUCTS, INC.—*Donald F. Moulton* appointed technical service representative in Vermont.

■

AIR REDUCTION SALES COMPANY, A DIVISION OF AIR REDUCTION CO.— *C. J. Langley* appointed manager, Philadelphia district, succeeding *R. H. Merriman.*

WESTINGHOUSE AIR BRAKE CO.—*W. C. Landis,* vice-president and general manager, Air Brake Division, retired.

■

SILENT HOIST & CRANE.—*Edwin G. Holl,* Philadelphia, Pa., appointed railroad sales representative, Philadelphia district.

■

MAGNUS CHEMICAL CO.—*E. H. Peterson,* executive vice-president, elected president, succeeding *W. M. Campbell,* who continues as chairman of the board.

OBITUARY

JAMES F. McCARTNEY, manager-district sales, McConway & Torley Corp., Pittsburgh, Pa., died Sept. 23.

Trade Publications

URETHANE INSULATING FOAM. 4-page bulletin gives information on advantages, mixing and K-factors of Nopcofoam H-602 and illustrates results of low-temperature tests on conventional foam and the new formulation. (Write: *Plastics Div., Nopco Chemical Co.,* Dept RLC, 175 Schuyler ave., North Arlington, N. J.)

■

TEST EQUIPMENT. Fuel pump, injector and governor test equipment for railway and transport gas turbines and diesel engine overhaul shops, etc., described in new catalog. (Write: *Marine Pumps, Inc., division of Diesel Control Corp.,* Dept. RLC, 226 N. Marine ave., Wilmington, Calif.)

■

CLEANING MATERIAL. Service Bulletin No. 56B describes technical features of, and specific uses for, Oakite 88, and gives general information on techniques for cleaning rolling stock. (Write: *Oakite Products, Inc.,* Dept. RLC, 146 Rector st., New York 6.)

■

CRANES. 20-page bulletin illustrates and describes industrial and mill type overhead traveling cranes. Included are tables of clearance dimensions for crane capacities of 5 to 500 ton and spans from 20- to 150-ft. Features include sell-aligning bearings, herringbone gears, flexible couplings, one-piece trolley framework and end truck and welded girder construction. (Write: *Milwaukee Crane, Division of Novo Industries, Inc.,* Dept. RLC, Cudahy, Wis.

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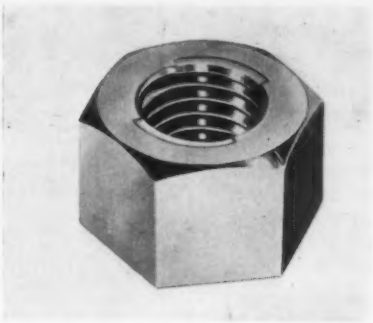
What's New

(Continued from page 12)

The system also makes possible sandblasting, where indicated, and a uniform application of most types of protective coatings can be made following cleaning operation. *United States Railway Equipment Co., Dept. RLC, 231 S. La Salle st., Chicago 4.*



Lock Nut

The Uni-Torque lock nut is said to assure positive locking action in applications where there is severe vibration or heavy shock loading. It is a one-piece, all-metal, reusable torque type of lock nut in which the lock is developed by deflecting the top threads slightly out of their true helix. It starts freely on the bolt until the deflected threads are reached, then wrenching is needed. Nut will lock in any position on bolt provided a minimum of 1 to 1½ bolt threads protrude beyond top of nut. The nut is available in a wide range of sizes and materials. *MacLean-Fogg Lock Nut Co., Dept. RLC, 5535 N. Wolcott ave., Chicago 40.*

Crane Carrier

The Model 1566 road and rail crane carrier is the first CCC road-rail carrier equipped with hydraulically operated rail guide wheels for track operation. Prior models have been mechanically operated. The rail wheels are retractable. This permits the carrier to be driven to remote areas for use by railroad repair and maintenance crews. The carrier, after installation of a Bucyrus Model 14-B 15-ton capacity transit crane, will be placed in operation on the Northern Pacific. *Crane Carrier Industries, Inc., Dept. RLC, Tulsa, Okla.*

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RAILWAY LOCOMOTIVES & CARS

published monthly at Newark, New Jersey for November, 1961.

1. The names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, Robert G. Lewis, 30 Church St., New York 7, N. Y.
Editor, C. L. Combes, 30 Church St., New York 7, N. Y.
Managing editor, F. N. Houser, 30 Church St., New York 7, N. Y.
Genl. Sales manager, Duane C. Salisbury, 30 Church St., New York 7, N. Y.

2. The owners are: Simmons-Boardman Publishing Corporation, 30 Church St., New York 7, N. Y.—Stockholders of one percent or more are: James G. and Louise Lyne, 30 Church St., New York 7, N. Y., Arthur J. McGinnis, 30 Church St., New York 7, N. Y., Joseph or Katherine Sanders, 2909 Maple Ave., Dallas 4, Texas, John R. Thompson, 79 West Monroe St., Chicago 3, Ill., Mrs. E. S. Fenton c/o Russell & Russell, 41 E. 42nd St., New York 17, N. Y., J. Streicher & Co., 2 Rector St., New York 4, N. Y. Partners of J. Streicher & Co. are: Joseph Streicher, Jack L. Streicher, Ethel Streicher, Judson Streicher, all of 2 Rector St., New York 4, N. Y., Morton & Co., c/o Marine Midland Trust Co., 120 Broadway, New York 15, N. Y.

3. The known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities are: None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: (This information is required by the act of June 11, 1960 to be included in all statements regardless of frequency of issue.) 5,834.

C. L. COMBES

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Interview with W. G. Boese, Chief Welding Engineer, Pullman-Standard

Welded, Cast, Riveted...Which Type of Underframe Gives Freight Car Buyers the Most for the Money?

W. G. Boese

"For the best underframe and best buy, choose welded construction," says W. G. Boese. Here are his reasons.

Q. Mr. Boese, freight car underframes are fabricated by welding, casting or riveting. What should a freight car buyer know to be sure of selecting the best type?

A. He should know that all three types are suitable, but that none are perfect. He should also know that welded units with welded bolsters, center fillers, and front and rear draft lugs not only provide well-proved advantages, but they do not require payment of any penalties such as added weight and cost.

Q. What do you mean by "well-proved" advantages?

A. More than 25 years ago Pullman-Standard realized that there were shortcomings in riveted underframes, so we began to design and test underframes with welded components. To be sure we were on the right track, we had Purdue University perform a series of comparison tests between draft lug construction of a welded type with the A.A.R. standard riveted type. The welded unit proved to be immensely superior.

Under the 27,000 pound drop hammer test the A.A.R. riveted design failed by shearing rivets at a force of 870,000 pounds. The P-S welded design withstood a force of 970,000 pounds and was still considered serviceable. The damage . . . a deflection of only 0.29 inches in the rear draft lugs.

Q. Was this the only test made?

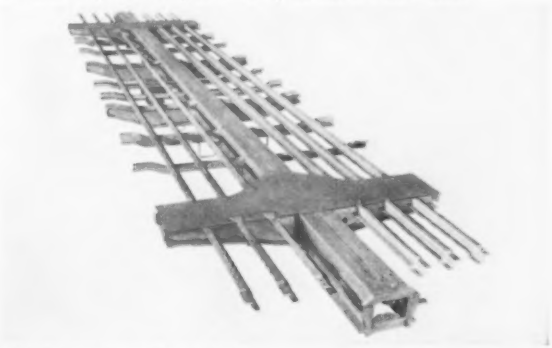
A. Absolutely not. Over the years, many exhaustive tests were conducted, some by Northwestern University, and many by Pullman-Standard's own Research and Development Laboratory. All tests proved the superiority of P-S welded draft lugs and center fillers over A.A.R. riveted designs. And, these were tests of Pullman-Standard production run cars of all types; not cars especially built or singled out for testing. But, I think the most conclusive proof of all is in the daily performance of over 250,000 freight cars with P-S welded draft sills in service today, including nearly 100,000 PS-1 Box Cars with all-welded underframes. A large percentage of these cars have been in service twenty years or more.

Q. Do you know how various types of underframes are performing in service?

A. Yes, we try to keep up to date on this. We maintain a team of Field Service Engineers constantly on the road. These men inspect Pullman-Standard and competition-built freight cars, give them complete physical examinations and report the findings. They have inspected nearly 22,000 freight cars, and with rare exception, found that P-S welded underframes stay in sound serviceable condition. When repair or maintenance is required it's usually minor, and easily done.

Q. How does this inspection process show other types of underframes are performing?

A. Since I've touched on riveted and welded, that leaves only cast units. Not too many of the cast units could be found and still fewer of the relatively new arrangements using the cast underframe end and bolster were located for inspection. However, as with other type underframes or draft sills or bolsters, fractures were noted; but of equal or more importance was the condition found at the bolster connection to the side sill. Here, in many cases the side sill was buckled. The complete lack of flexibility in the cast end unit transmitted the forces not absorbed by the coupler directly to the car structure.



Q. Is there anything else?

A. Well, as you can guess, I am convinced that welding is the answer, along with proper and proved design, to obtaining the best value in car underframes. Pullman-Standard is a leader and pioneer in advanced automatic welding techniques, and our quality control insists that every weld be right. We test and retest, check and recheck. For example, not only is the welding tested and checked, but each new order of welding rod is checked and chemical composition of the steel is tested. For new jobs or new welding applications, if the right machine isn't available we design it in our own welding research laboratory and have it built or build it ourselves. The quality results and production economies make it pay.

Look at it this way, a car buyer who wants the best underframe and best value would be well advised to specify P-S welded underframes. He can take a long range look forward to savings, not only in initial costs but also in reduced repair requirements, then invest this saving at the time the cars are built in such dividend paying items as nailable steel floors, roller bearings or lading protection units that will extend car life and improve service to customers.

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